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THE METAPHYSICS

OF

THE SCHOOL

BY

THOMAS HARPER

S. J.

VOL. II.

οὐ γάρ τι νῦν γε κἀχθὲς, ἀλλ' ἀεί ποτε
ζῇ ταῦτα, κοὐδεὶς οἶδεν ἐξ ὅτου 'φάνη.

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PREFACE.

THE author thinks it necessary to remind his readers that the Scholastic doctrine touching the genesis and constitution of material substances necessarily includes a consideration of the efficient cause, without which it cannot be completely understood. This important Chapter in the Book on Causes will occupy the greater part of the next Volume; not only because it is fruitful of important metaphysical questions, but likewise because it offers the most appropriate place for considering the harmony that exists between the metaphysics of the School and the latest physical discoveries.

He takes occasion to notice an error which has inadvertently been allowed to appear in the first Volume. It occurs in the *sixty-fifth* Proposition, (Book III, Ch. ii, art. 4, p. 347). An illustration is there given, as follows: 'In like manner, water is composed of oxygen and hydrogen; *a Mode is, consequently, required for the combination of these two, in order to the evolution of a new substantial Form.*' The statement in Italics is not true; since the combination is the evolution of the form of water and the corruption of the oxygen and hydrogen. A mode is, therefore, neither necessary nor possible.

There are two clerical errors in the same Volume, which might cause perplexity. In p. 204, l. 9, 'perfection' should be 'perception'; and in the same page, l. 25, 'division' should be 'indivision.'

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Proposition CCXXXVIII. Artificial Forms are simply accidental modes. Wherefore, they exercise a real formal causality and are educed out of the potentiality of their Subject 728, 729

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APPENDIX A.

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THE TEACHING OF ST. THOMAS TOUCHING THE GENESIS OF THE MATERIAL UNIVERSE 730–748

i. The primordial Creation terminated in three creatures,—to wit, spiritual Intelligences, the celestial bodies, the elements (or simple bodies).

ii. At the same time there was concreated in matter a potentiality for all subsequent bodily Forms.

iii. Divine addition of *seminal forces.*

iv. The rest, the result of natural evolution under the Divine Administration.

v. Two points on which Latin and Greek Fathers were agreed in their interpretation of the Mosaic Cosmogony;—first, That primordial matter was concreated with the elemental Forms; secondly, that plants and animals were not created *in act*, but only virtually, in those six days, or epochs.

vi. Chemical compounds, not created but generated according to natural operation after the six days of Creation.

vii. Distinction drawn by St. Thomas between chemical compounds and mechanical mixtures.

(The teaching of the Angelic Doctor concerning the nature and constitution of chemical compounds summarized under nine headings).

viii. Minerals included under the elements in the Mosaic record,—the reason.

ix. Plants generated after the creation of the simple bodies, and previous to the generation of animals. In what sense created,—viz. *virtually*, not actually. What is meant by the Divine Administration.

x. How the various species of living things are interchained.

xi. Doctrine of St. Thomas in relation to botanical and zoological classification.

xii. Progression of Forms in the development of the human embryo.

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xiii. The *principle* of natural evolution taught by the Greek and Latin Fathers of the primitive Church as well as by the Angelic Doctor.

xiv. According to the same authorities, the simple bodies were alone *created*, in the strict sense of the term; the rest of nature, a natural evolution.

xv. Modern exaggerations of the principle of evolution.

xvi. In particular, the erroneous identification of *Ontogeny* with *Phylogeny*.

APPENDIX B.

Significations of the terms, *Form* and *Matter*,—*Formal* and *Material*,—*Formally* and *Materially* 749–754

GLOSSARY 755–757

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CORRIGENDA.

p. 175, l. 8, *for* intrinsically *read* extrinsically.
p. 596, l. 15, *for* nor *read* or.
p. 601, l. 3, *for* on *read* in.
p. 605, l. 23, *for* that *read* in that.
p. 634, l. 37, *for* every where *read* everywhere.
p. 706, l. 29, *for* inseparable *read* separable.
p. 708, l. 7, *for* material substances), which *read* material substances, (which
p. 752, l. 38, *for* adverse *read* diverse.

Harper's Metaphysics, Vol. II.

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BOOK IV.

THE FIRST PRINCIPLES OF BEING.

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CHAPTER I.

INTRODUCTION.

By *Principles of Being* are understood those universal Judgments, by which Being and its notes are represented. They are the foundation upon which the Metaphysical Science depends. All the sciences have their respective First Principles, which are the foundation of subsequent demonstration within the sphere of the proper subject matter; it is natural, then, that the queen of sciences should likewise have her First Principles, which assume the widest extension in accordance with the extension of the formal object, and afford an ultimate basis for those of the other sciences.

SCHOLION.

In order that the subsequent investigation may be better understood by the reader, it will be necessary to borrow from *applied logic* certain elementary truths touching demonstration, the different species of judgments and their respective natures.

i. The demonstrative syllogism presupposes, in order that it may be enabled to draw its conclusion, three elements (as it were), of which two are explicitly, one implicitly, contained in its constitution. The two explicitly contained in the syllogism are the premisses; the one implicitly and virtually contained is the *Dignity* (or *Dignities*) on which demonstration depends.

a. The *Dignities*, as they are called in the School, never enter actually into the syllogism; but they virtually impart to it a cogency and evidence in such wise that, unless their truth be admitted, all demonstration becomes impossible. Thus, to take an example: that *Two and two make four* is a self-evident truth; but it would be utterly valueless, save for the Principle of Contradiction. Let us suppose for one moment that this Principle is false. In such case it might be true that *Two and two make four*, and at the same time that *Two and two do not make four*.

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Consequently, it would not be possible to deduce any certain conclusion from the proposition. These Dignities are the First principles of science.

b. The first Premisses of perfect demonstration must be true, necessary, essential, primary, proper, convertible, self-evident, immediate, and causes of the conclusion[1]. By *essential* is meant, that they must have for middle term the formal and material cause of the subject; the material and efficient cause of the predicate, or passion. In other words, the middle term must be the definition of the subject, and must enter into the definition of the Predicate. Judgments are said to be *proper*, when they are not extraneous to the subject; as also when they are limited to the subject, affecting it alone and no other. By *convertible* is to be understood, that nothing in the periphery of the subject is outside the periphery of the predicate; and, conversely, that there is nothing within the periphery of the predicate which is outside the periphery of the subject. Thus, for instance, let it be a true convertible proposition that *All men are capable of laughter*; then it is true, *vice versa*, that *All beings capable of laughter are men.* By *immediate* is meant, that there is no middle term discoverable, by which such Judgments can be demonstrated. *All men are capable of laughter* is not an immediate Judgment; because it can be deduced from the middle term, *Rational animal.* Lastly, when it is said that these first premisses must be *causes of the conclusion*, it means that they must *be causes of the conclusion not only logically*, or *conceptually*, but *materially* likewise, i. e. that the objective relation of the subject to its predicate must be *causal.*

ii. Judgments are either *analytical* or *synthetical.* An analytical Judgment is representative of a composition or of a division which is of the essence of the subject, and is discoverable by simple analysis in the concept of the latter. Hence the name. Thus, for instance, the attribute, *rational* or *intellectual*, is essentially contained in the idea of *man.* A synthetical Judgment is representative of a composition or of a division which is not of the essence of the subject, but is added to it,—objectively by the fact, subjectively by observation or experiment. It is for this reason that they are called synthetical; because they join together with the subject a predicate, or attribute, extraneous to that subject's essence. Thus,

[1] See St. Thomas, *Opusculo XLVIII (aliter XLIV), c.* 2.

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Some men are blind,—Men are subject to fever,—The planets move in their orbits round the sun,—are instances of synthetical Judgments. It is plain then that analytical Judgments are necessary, universal, immutable; whereas synthetical Judgments are contingent, particular, mutable. The former have been likewise called *identical*; because there is an objective identity between subject and predicate in themselves.

In the present Book four questions will occupy our attention, touching

I. The two kinds of Principles generally.

II. Analytical Principles, in particular, and their reduction.

III. Experimental or synthetical Principles, their formation and certitude.

IV. The *à priori* synthetical Principles of Kant.

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CHAPTER II.

THE TWO KINDS OF SCIENTIFIC PRINCIPLES.

SCIENTIFIC Principles are certain universal Judgments from which demonstration ultimately proceeds. They are of two kinds, viz. analytical and synthetical.

PROPOSITION CXVI.

Immediate analytical Judgments are in themselves universal.

The following are the proofs:

I. Those Judgments which represent the essence of their subject, abstraction made of its actual existence, wherein, consequently, the *nexus* between subject and predicate is essential, are in themselves universal; even though the subject should be singular, or individual. But such is the nature of immediate analytical Judgments. *The Major* is plain. For the essences of things, as we have already seen, are immutable and eternal; while the contingency of finite Being is exclusively connected with its existence. On the other hand, even though *de facto* the subject should be the only one of its species; nevertheless, its essence can be truly conceived as capable of indefinite multiplication in possible entities, of each and all of which that same specific essence (or essential note or notes) would, as a consequence, be predicable. Nothing can be more patent than that all inference from fact to possibility (i. e. from actual to possible Being) is valid; according to that adage of the Schools, *Ab esse ad posse valet illatio.* If, therefore, there is one of a kind, there can be no sufficient reason why there should not be indefinitely more of the same species, according to the good pleasure of the Efficient Cause; unless, indeed, there should be an essential impediment, in any given case, to such multiplication.

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NOTE. The above argument evidently applies only to finite essence; the infinite Essence, by virtue of its Infinity, necessarily excludes all, even metaphysical, possibility of multiplication.

II. All analytical Judgments are either affirmative or negative, i. e. they either compose the predicate essentially with the subject or divide essentially the one from the other. In either case they are in themselves universal. For, i. *All* affirmative analytical Judgments are of this nature, according to the definition of them already given. *A fortiori,* therefore, immediate analytical Judgments must be such; since they are simple intuitions of the intellect. (The term, *immediate*, has been inserted into the enunciation of the Thesis, because it is only analytical Judgments of this kind that can claim the dignity of Principles; seeing that *mediate* Judgments are deductions, or conclusions, from Principles, and cannot, therefore, be themselves Principles.) The *Major* of the above argument is thus declared: Whensoever there is an essential objective identity between the subject and predicate in any given Judgment, so that by simple analysis the predicate is discoverable in the essential concept of the subject, it is metaphysically impossible that, within the actual or possible periphery of the subject, there should be any single entity to which the predicate does not necessarily belong. Thus, *All men have the faculty of locomotion*, is a Judgment that is in itself universal. For, any entity that should be without this faculty, (*the faculty*, be it observed, not *the act*), would not, could not, be a man, since locomotion is an essential property of the human race. ii. Similarly, in analytical Judgments that are negative, since the subject excludes the predicate by virtue of its essential nature, it is metaphysically impossible that, within the actual or conceivable periphery of the subject, there should be any one entity in which such predicate could be found. Thus, for instance, *No plants have free-will*, is a negative Judgment that is in itself universal. For, in the hypothesis that a given entity should have this gift, by the mere fact it could not possibly be a plant; since the nature of a plant essentially excludes volition, free or otherwise. Hence, therefore, we conclude that all analytical Judgments, whether affirmative or negative, (and *à fortiori* those which are immediate), are in themselves universal.

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PROPOSITION CXVII.

Singular synthetical, or empirical Judgments cannot in any way become universal.

NOTE. Synthetical Judgments are often designated *empirical*, because they are the result of experience, observation, or experiment.

This Proposition is so evident as scarcely to stand in need of proof. For those Judgments, wherein the subject is assumed as formally singular by virtue of their composition or division, cannot in the nature of things become universal. But singular synthetical Judgments are of this category. The declaration of the *Minor* is as follows. Seeing that, in synthetical Judgments, the predicate is not essentially included in, or excluded from, the subject, but is purely adventitious to it; it follows, as a necessary consequence, that the predication of the predicate must be limited to the formal periphery of the subject. If, then, the subject is singular, the attribution of the predicate will be verified of the singular subject, only, *as* a singular. It can never, therefore, assume the proportions of a universal. To take an instance: In the following synthetical Judgment, *The sun exists*, existence is predicated of the sun accidentally. For, evidently, existence is no part of the sun's essence; otherwise, the sun would be no longer contingent but necessary Being, and could not but exist. Therefore, existence is predicated of the sun formally as a singular, and could not be extended in predication to all possible suns. In like sort, *I am thinking*, is a synthetical Judgment, in which the *act* of thinking (not the *faculty*) is predicated of myself. Now, a particular train of thinking *hic et nunc* is not contained in my essence (i. e. in the nature of man), but is accidental to it. Consequently, the attribution of that particular act is confined to me personally, and could never be truly extended to the whole human race.

PROPOSITION CXVIII.

Particular empirical Judgments, which are the foundation of legitimate induction, are capable of assuming a sort of moral universality, not on the strength of the induction, but by virtue of some analytical Principle.

LEMMA. The fundamental Principle, or *dictum*, of induction, as

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we learn in Logic is this: That which is predicated of each and all the individuals contained under a whole, is predicated of the whole itself. The following may be given as the formula of induction:

$$a, b, c, d, \ldots\ldots x, \text{ are } A,$$
$$a, b, c, d, \ldots\ldots x, = W,$$
$$\therefore \text{ All } W \text{ is } A.$$

In this formula, $a, b, c, \ldots x$, represent each and all the individuals of a given whole; A stands for the attribute predicated; W symbolizes the whole. In purely logical induction, therefore, there is really no middle term, as the Philosopher has pointed out; for the middle term is identical with the minor. But in physical induction (i.e. in induction as applied to physical investigation) the formula never is, never can be, verified. Hence, all the inferential conclusions of experimental Physics are logically (so to say) informal; for there is always what would be called in deductive reasoning *an undistributed middle*. The following is the reason why the formula never is, never can be, verified. It is *physically* impossible that all the *actual* individuals of any given physical whole should be subjected to the personal observation or experiment of any one individual; it is metaphysically impossible that either past, future, (relatively to the supposed experimentalist), or purely possible individuals of the same whole, should be subjected to similar observation or experiment. To illustrate this assertion by an example or two: It has been ascertained, by chemical analysis, that *water* is composed of *oxygen* and *hydrogen* according to a fixed ratio of their respective equivalents. Now, how much of all the water, past, present, and future, has been submitted to such analysis by all physical experimentalists, taken in a body? What is more to the point, how much has one individual so analyzed? The proportion to the whole must of necessity be so infinitesimally small as to amount to all but nothing. In like manner, as touching the order of superposition in the geological strata, how much of the earth's crust has been personally examined by the most ardent of geologists, or even by all geologists put together? Then it must be remembered that the experiments of others (the accounts of which we receive on faith) afford *moral*, but not *physical*, evidence; and though the former under certain circumstances may prove to be as cogent as the latter, still it is not equal to the weight of a scientific conclusion. Therefore, experimental inferences always go beyond

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the logical virtue of their premisses. Nevertheless, these conclusions, in the greater number of instances, are accepted as at least physically scientific. Hence arises the question; How is it that logically informal conclusions can be elevated, and that too with reason, to the rank of a physical Principle or Law? In the present Proposition the logical insufficiency of these conclusions, or inferences, is declared; and a general sort of answer is given to the question just proposed. The complete solution will occupy our attention in a subsequent Chapter.

I. THE FIRST MEMBER OF THE THESIS, in which it is asserted that *particular empirical Judgments, which are the foundation of legitimate induction, are capable of assuming a sort of moral universality*, is obvious to common sense, and accepted by the general verdict of mankind. As a fact, we exclusively base experimental Physics on Judgments of this description. We may be well spared, therefore, the labour of proof.

It may be observed that the clause, *which are the foundation of legitimate induction*, has been inserted in the Enunciation, for the purpose of excluding all Judgments of a similar kind which give occasion to rash and hasty inferences, not to legitimate inductions. By *moral universality* is meant such a universality as is not wholly absolute, but in some way conditioned according to the free-will of another; just as moral evidence depends on the free-will of the witnesses.

II. THE SECOND MEMBER declares that such universality accrues to these Judgments, *not on the strength of the induction, but by virtue of some analytical Principle;* which is proved in this wise.

i. It cannot be the result of induction; because physical induction, as has been already explained in the *Lemma*, is founded in the particular and confined to its limits. But the Universal can never be inferred from the particular; otherwise, the effect would be nobler than its cause.

ii. It must, consequently, be due to some analytical Principle. For, seeing that neither the particular nor, *à fortiori*, the singular can of itself generate the universal, nothing remains save that such universality should be the result of a universal. Now this universal must of its own nature be a universal; otherwise, the same question would recur as to *its* universality. But a universal in its own right, as has been already stated, is an analytical Judgment.

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CHAPTER III.

ANALYTICAL PRINCIPLES.

As many as are the Judgments which admit of being formed from a simple analysis of the concepts that represent Being and its attributes, or again, that represent the primary and more general determinations of Being with their respective attributes; so many analytical Principles may there obviously be. Furthermore; any Judgments that admit of being formed from a simple analysis of the formal object of any particular science, (however inferior this latter may be in the hierarchy of sciences), will serve as an analytical Principle for that science.

Instances of such Principles are not far to find. Two shall be borrowed from the Metaphysical Science; and these have been purposely chosen, because they will form the subject of our immediate consideration. An analysis of the idea of contingent Being (one of the primary determinations of Being), supplies us with the Principle of causality. An analysis, and subsequent comparison of the idea of Being in the universality of its extension (which is real), with that of Not-Being (which is conceptual), gives the Principle of contradiction. These two will now severally occupy our attention in the order just adopted. Wherefore,

I. Concerning the evidence and certitude of the Principle of causality.

II. Concerning the value of the Principle of contradiction, as the ultimate in order of reduction. Under this section of the subject, it will occur to examine into the value of other Principles which, in more recent times, have been proposed, in place of that of contradiction, with the professed intention of deposing this latter from its ancient supremacy over the field of philosophic thought.

PROPOSITION CXIX.

The Principle of causality, (which may be thus enunciated: Inceptive or contingent Being necessarily supposes its

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efficient cause) is analytical. Hence the concept of an efficient cause is essentially contained in the idea of change, or of the possible.

Prolegomenon I.

By *inceptive Being* is understood Being that either has, or is capable of having, a beginning. It is not intended that the term should be contracted to substances alone; but that it should likewise include accidental transformations, as well as substantial or accidental modifications. In short: Everything real which once was not and now is, or is not but might be, is represented here by this phrase. It is sufficiently obvious that, being inceptive after the manner explained, it must be contingent, not necessary, Being.

Prolegomenon II.

The notion of *cause* is not essentially included in that of Being; though that of *activity* may perhaps claim such inclusion. The reason is, that cause is properly a relative idea, since it connotes an effect really distinct from itself,—actual, if the cause be actual; possible, if the cause be only possible. Hence, *activity* and *causation* are by no means identical terms. For activity may be immanent and, therefore, absolute; while causation is necessarily transitive and terminative extrinsically, or (as it may be put in Saxon phrase) *outgoing*. To illustrate by example: Thought in a man's mind is an immanent action, because it begins and ends with the thinker. Therefore, the thought is formal cause to the mental faculty; rather than the mental faculty efficient cause of the thought. But the question at present occupying us concerns *efficient* causation. On the other hand, the action of a sculptor upon a block of marble is transitive, because it passes out of himself (so to say) on to the stone; and it is terminative extrinsically, because the object which terminates his energy is external to himself. His action, therefore, *as causal*, connotes the effect produced upon the marble.

Prolegomenon III.

It will conduce towards a satisfactory prosecution of the proposed analysis, if we anticipate certain conclusions concerning the nature of time, which will be treated *ex professo* in a later Book. Time,

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in the abstract, is a purely logical concept, which is, nevertheless, founded in reality. Apart from the existence of contingent Being, it neither is, nor could be, anything. So far as it can boast of reality, it is nothing more or less than successive change, or the succession of change, in finite and contingent entities. Hence, if there existed nothing but necessary and, consequently, immutable Being, there would be no time, but an ever-present *now*. If, therefore, we abstract from the notion of time all in it that is purely ideal, the residuary reality will be simply and only the mutations and sequences of finite Being. Let it be observed, however, that it is not now a question as to *the approved measure* of time, wherein there is naturally a greater show of reality. Notwithstanding, even here, if the matter is thoroughly sifted, it will be found that the divisions of days and months and years are purely based on the orderly succession of changes in celestial bodies.

1. In the first member of this Thesis, it is declared that *the Principle of causality (which may be thus enunciated: Inceptive Being necessarily supposes,—better perhaps, postulates,—its own efficient cause), is analytical.* If such is really the case, a careful analysis of the concept of inceptive Being must evince, that within such concept is essentially contained the idea of some efficient cause, by virtue of which that said entity is, or at least may be. Let us see whether it be so, or not. It will facilitate the investigation, if we take *actual* inceptive Being as the subject of analysis. No one will care to deny that *possible* inceptive Being must be of the same nature as the former; while it is more difficult to realize, save for those who have made it a professed object of study. Actual inceptive Being, then, is Being, now existing, that once had a beginning. In consequence, previously to that beginning, it was nothing. Hence, representing the inceptive Being as A, we have two terms, respectively represented as A and not-A; i.e. the inceptive Being existent, the same Being not existent. Furthermore, objectively in order of succession not-A preceded A. Thus, then, we are initially confronted with not-A; and not-A as, in some way or other, a real term of thought. But how is this possible? For not-A is in itself a pure negation. Nor can it be said to have a real foundation in A; because, in that preceding time, there is as yet no A to be denied or removed. Again, if it were founded in A, A would be necessary Being; because, in such case, not-A

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would postulate A as the necessary condition of its own conceivableness and (what is more to the point) of its objective reality, so far as it has any reality. In other words, A would be necessary to the beginning of itself, and would, therefore, exist prior to its existence. Yet, it is plain that there is a reality of some sort in the idea, for instance, that the Duke of Wellington was not in existence during the reign of William III. What can be plainer, then, (to proceed in the analysis), than that not-A postulates, even for its conceivableness, some existing entity which shall be the measure of its real priority to A? For, if you are to begin absolutely and solely with not-A, so that no existent Being whatsoever shall be presupposed, not-A is an empty nothing. The thought (if, indeed, the thought were possible) would not be representative; because it would be a negation of Nothing, and could have no object either direct or indirect. You might say, perhaps, that its precedency to A is measured by time. But this is no solution at all; for it must be remembered that time, as has been declared in the last *Prolegomenon*, is *in itself* destitute of reality, and that, *as* real, it is identified with the successive changes of existing contingent Being. Consequently, it cannot verify that by which alone itself is verified. Hence, it is plain that we are justified in eliminating from our present analysis the abstract idea of time, and substituting in its place the succession, or successive changes, of contingent and inceptive Being. But that brings us back to the original point of discussion. For the first change (as it may be called) of inceptive Being is from Not-A to A, i.e. from non-existence to existence. But this transition postulates, as has been already said, a real *something* which shall be the real measure of this transition; for, otherwise, the idea is inconceivable. It is a metaphysical impossibility that there should be such transition and, consequently, a beginning to be, without such measure.

Again: the real existing Being, which is absolutely required in order that any priority of not-A may become a possible term of thought, cannot, as we have seen, be A; because, in that priority or precedence of not-A, A was nothing, and a priority to nothing is no priority at all. It follows, therefore, that the required entity must be other than A.

Furthermore; that Being, which is thus presupposed, is necessary to the existence of A. For, without it, there could be no priority of not-A and, consequently, A could never *begin* to exist; whereas,

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once you posit the supposed entity, the existence of A becomes *ipso facto* possible without further condition. But, if one Being of itself solely is a sufficient reason for the existence of another, and is also necessary, so that, without it, the existence of that other is metaphysically impossible; we are in presence of all that is required in order that the former should be truly and justly conceived as the efficient cause of the latter. Let an illustration serve to facilitate this somewhat abstruse process of thought. Chronologists tell us that Sir Walter Scott was born in the year of Grace 1771. Accordingly, in 1770 there was no Sir Walter Scott. Now, let us, for the sake of illustration, make an absurd hypothesis, and suppose that there had been no existing entity of any kind before the birth of the great novelist. If such had been the case, could you possibly talk of his beginning to be, or of his previous non-existence? The idea perishes in its own inconceivableness. Where could you find any, even imaginary, basis for a *before* and *after*? There could have been no time; because, on the hypothesis, there was no contingent Being and, as a consequence, no successive change. Let us now proceed to introduce Sir Walter Scott's parents, and again make a fresh absurd supposition, that they were the only entities existing previous to the son's birth. Confining our inquiry to secondary causes, would they form a sufficient basis for truly conceiving that Sir Walter Scott had begun to exist? Let us examine and see. They were existing in 1770, when the son was not as yet born and was, consequently, Not-A. *Relatively to them*, he was Not-A; and, *relatively to them*, on his birth in 1771, he was A. They were, therefore, competent measure of his transition from not-being to being. Furthermore, they *of themselves* were sufficient (so far as proximate causation is concerned) for his existence; and, supposing the established order unaltered, they were conditionately necessary to his existence. What more is required to justify us in declaring, that they were the co-efficient causes of Sir Walter Scott? The illustration has been taken of set purpose from secondary causes; though they give rise to a difficulty, which will be brought before the notice of the reader later on. Thus, then, an analysis of the idea of inceptive Being convinces us that it essentially contains within itself the notion of an efficient cause.

To reduce the above analysis to a summary expression: Inceptive Being first was not, and afterwards was. Therefore, (i) it supposes

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a priority and, consequently, some existing Being as measure of its priority. (ii) That Being must be other than the inceptive entity itself; because, during that priority, the latter was nothing. (iii) That Being is necessary, in order that the new entity may be able to begin existence; for, without the former, there could be no newness or commencement, because no priority. (iv) That same Being is sufficient for the possible existence of the new entity; because, according to the supposition, the existence of the former is *de facto* followed by the inchoated existence of the latter and, therefore, *à fortiori*, is capable of being so followed.

II. IN THE SAME MEMBER of the Thesis it is further asserted *that the concept of efficient causation is likewise essentially contained in the idea of contingent Being*; so that the Judgment, *Contingent Being necessarily supposes its efficient cause*, is analytical.

For the sake of greater clearness, contingent Being will be taken in the full latitude of its meaning, as inclusive not only of existent, but of possible, contingent Being. In other words, all contingent Being, possible, as well as actual, (whether past or present), is taken together as one existing whole; in order that, as a whole, it may be submitted to philosophical analysis. The assumption is obviously legitimate, and will save much useless elaboration.

Now, what is contingent Being? Contingent Being is Being either existing, or capable of existing, without absolute necessity of existence. Hence, it is defective Being; in other words, Being existing with defect of Being. By the very fact that such is its nature, it postulates, as a necessary condition of its existence, some existing entity other than itself. For, if there were nothing else besides contingent Being, then *absolute necessity of Being* must be either nothing, or contingent Being itself. But either hypothesis is self-contradictory. For, if absolute necessity of existence should be nothing, then, Being existing with defect would be identical with Being existing without defect; since the defect of nothing is no defect. On the other hand, if the absolute necessity of existence could be contingent Being itself; in that case, Being *without* absolute necessity of existence would be really the same as Being with absolute necessity of existence,—a contradiction in terms. The supposition that *merely possible* Being could supply the place of the entity required, has been excluded from the inquiry for the following reasons: (i) *The actual existence* of all possibles and, therefore, their desition as mere possibles, form a part of our hypothesis. (ii) Merely

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possible Being, so far as the idea is real, represents an existing Being objective to itself. (iii) Such a supposition would make of a possible contingent entity a Being existing with absolute necessity of existence, which is a yet more flagrant contradiction. Wherefore, if there is contingent Being, there must be necessary Being; which latter cannot but be distinct from the former. Again: Necessary Being is absolutely required, in order that contingent Being may be able to exist. Lastly, necessary Being is *of itself* sufficient for the existence of contingent Being; for, by virtue of the sole existence of the former, contingent Being either exists or is capable of existing. These last two assertions are evidently based on the previous analysis. For, according to the hypothesis, contingent Being here represents the whole collection of contingent entities, as well possible as actual; therefore, it can find the necessary and, at the same time, sufficient reason of its actual or possible existence only in necessary Being.

III. In the second Member of this Thesis it is declared that *the concept of an efficient cause is essentially contained in the idea of any change.*

The analysis pursued in the two previous Sections, more notably in the latter, would seem to deal primarily with *substances*. The Proposition, which now awaits its verification, extends itself to every change, whether substantial, accidental, or moral. Now, it requires but little reflection to perceive, that the transition from Not-Being, or subjective nothingness, to Being, is a change,—nay, the greatest of all changes. But attentive consideration will suffice to convince us, that every real change of whatsoever kind is truly a transition from Not-Being to Being. Suppose that we take, as an instance, *the change of a certain mass of water from cold to hot.* Evidently there is, first of all, water without heat; afterwards, water with heat. Therefore, the heat in the given instance passed, *metaphysically* speaking, from nothingness (so far as the information of that particular mass of water was concerned), into Being. Here we have an example of *accidental* change. We will now take an instance of *modal* change. *I sit down upon a chair;* whereas, let us say, I was previously standing. That sitting position is new; i.e. it was not, and now it is. Wherefore, it too has passed from Not-Being to Being, for so much of Being as it can claim. Such being the case, the formula, presented in the first Section of this Proposition, equally applies here. All change necessarily involves a

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previous Not A, and a subsequent A. It postulates, therefore, some other than itself as measure of the required priority, i.e. of that *Before*, wherein the formal term of the change was as yet not existent. That *other*, as a consequence, is at once necessary to, and sufficient for, such novelty of existence as is essentially included in the idea of change. To take an example: *A table begins to move.* It was previously at rest. Evidently enough, that motion is something real and something inceptive; and, as evidently, the motion could not be to itself the measure of its previous non-existence. But we will suppose that a servant is in the room, who has moved the table. *Now* there is a real measure of the previous non-existence of the motion; and an existing entity has been introduced that is (in the given hypothesis) necessary, and (so far as secondary causation goes) sufficient, for the local change in the table. That the motion is spontaneous in any given case,—not communicated from without (such as may be seen in living entities),—cannot weaken the conclusion. The only difference is, that in such cases the *other* which is postulated by the change would be intrinsic to the subject of such change.

IV. In the second Member of this Thesis it is further asserted, that *the concept of an efficient cause is essentially contained in the idea of the purely possible.*

The truth of this part of the Proposition will become at once manifest, by a reference to the doctrine touching Possibles, as evolved in the second Book of the present Work. For it was there shown, that purely possible Being is in itself, or subjectively, nothing; and that the real element in the concept is discoverable only in some other existing Being Who is really distinct from the possible entity. It was further shown that, while the *internal* possibility of such entity depended proximately on the exemplar Idea, fundamentally on the Nature, of that other Being Whom it supposes; its *external* possibility is entirely measured by the Power of the same Being. Consequently, for the verification of the idea of the purely possible there is required an existent Being (distinct, therefore, from the possible entity), Who is necessary to, and in Himself sufficient for, the existence of the possible, or its transition from a state of pure possibility to that of existence. But, in the union of these three elements everything is to be found that fulfils the idea of an efficient cause. Therefore, the idea of an efficient cause is essentially contained in the notion of the purely possible.

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DIFFICULTIES.

I. The so-called Principle of Causality is a mere assumption, unsupported by facts; and has been unthinkingly accepted on the authority of the old philosophers. *The Antecedent* is thus proved. The facts of sensile experience only exhibit a succession in beings, i.e. that one Being is prior, another subsequent. But such succession is not in any way adequate to the concept of efficient causality, as commonly understood. For efficient causality supposes that the precedent Being, (or, in other words, efficient cause), energizes influxively towards the production of the subsequent entity or, (in the hypothesis of causation), of that which would be denominated the effect. Now, sensile experience supplies no evidence whatsoever of the existence of any such virtue or energy, passing from the so-called cause to its effect; but simply reveals an order of succession as subsisting between the two. Since, then, all our ideas are originally derived from sensile perception, it follows that the Principle of causality is a mere assumption, as has been said, entirely destitute of foundation.

ANSWER. The *Antecedent* is, of course, denied. Now, for the proof. In the first place, it may be categorically denied, that the facts of sensile experience only go to prove succession of beings. For the universal persuasion of mankind affords sufficient evidence of the contrary. There is no one that has attained the age of reason, who does not recognize, in the sensile facts which come before his notice, an essential difference in the nature of the priority and posteriority which those facts severally reveal in various groups of instances. However, it will conduce towards a more complete and exhaustive solution of the difficulty, if we distinguish the above proposition. Accordingly: That sensile experience, *by itself and without the assistance of the understanding or reason*, affords evidence only of a succession in Being,—well, let it pass. That sensile experience, *as subjected to the intuition of the intellect*, affords evidence of nothing but such succession,—denied. As touching the confirmatory proof: The *Major*, wherein it is asserted, that *Efficient causality supposes the cause to energize influxively in the production of its effect*, in like manner requires distinction. For the phrase, *energize influxively*, is more or less analogical and, at least, indefinite. If, then, it is merely meant, that efficient causality supposes the cause to be at once necessary to, and of itself sufficient for, the existence of its

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effect,—The *Major* is granted. If, on the other hand, it is meant that efficient causality supposes the cause sensibly to transmit something from itself as foundation of the effect,—there is need of further distinction. That it supposes this essentially and, therefore, always, cannot be allowed. That it supposes the same in certain cases and (as it were) accidentally, may be granted. As to the *Minor:* It is not true universally, that sensile experience supplies no evidence whatever of the sensile influx of the cause into its effect. It is absolutely false, that sensile experience reveals nothing save an order of succession between the one and the other; as has been remarked already.

The concluding *Antecedent* must also be denied; though, for the sake of greater precision, it shall be distinguished. That all our ideas about *the Ego*, i.e. our own selves, are formally derived from sensile perception, is not true. That all our ideas about *the non-Ego* (or, in other words, all reality that is not ourselves) are primitively derived from sensile perception, needs further distinction. For, if it is thereby intended, that those ideas are in such wise derived from sensile perception as that the idea is a mere *reflex* of the sensile perception and, consequently, represents nothing which is not *explicitly* precontained in the latter, the proposition is false. If it is only meant, that all such ideas can trace their origin to some sensile perception or other, yet so, that the idea represents the essence or nature of the object, while the sensile perception exhibits the sensile phenomena, the material conditions, or the accidents, of corporeal substance,—it is granted. The *Consequent*, therefore, subject to the given distinction, must be denied.

As the present difficulty is the *magnus Achilles* of modern scepticism, it may not be unserviceable to subjoin certain notes explanatory of the above answer. Wherefore,

i. It is evident to common sense and abundantly confirmed by constant experience, that the human intellect perceives in sensile phenomena various kinds or orders of succession (i.e. of priority and posteriority) among entities; and likewise perceives that these orders are wholly distinct from each other. Sometimes, the priority and subsequence are seen to be *purely accidental;* and it is plain that there is no dependence whatever of the subsequent on the prior entity. Thus, for instance, *day succeeds night.* But no one has ever imagined that the day was dependent on the night; since it is equally true that *night succeeds day.* Again, *one man gets into an*

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omnibus; shortly after, another enters the same omnibus. Here there is plainly priority and posteriority; yet who has ever been mad enough to suppose that the entrance of the second was *caused* by the entrance of the first? But, secondly, in many cases, priority and subsequence are seen to include a dependence of some sort, though not a causal dependence. Thus, *my writing a letter* depends, I know, upon there being *light enough* in the room; nevertheless, nothing can be clearer than the fact that the light is not the *cause* of my writing the letter, but only a *necessary condition.* So, in like manner, *the door of a bird-cage is opened* and *the bird flies away.* The dependence of the bird's flight on the opening of the cage is manifest; yet no one can doubt that the opening of the cage was not the efficient cause of the act of flight, but that it merely removed an *impediment* which, so long as it remained, rendered it impossible for the bird to make free use of its wings. Such a condition is called by the School, *removens prohibens.* Now, in the first mentioned order of succession, the prior entity was neither necessary nor sufficient for the existence of the second. In the latter instances, the prior entity was necessary, indeed, but not sufficient for the existence of the subsequent. I could not write without light; but light could never give me the capacity of writing. If it could; why should not trees or dogs write? The opening of the cage was necessary to the escape of the bird; but common sense teaches, that the act of opening the cage-door could supply the canary neither with life nor pinions. On the other hand, in the prior existence of *parents* I recognize at once a causal dependence; for they are clearly both necessary to, and sufficient for, the existence of their *child.* The formal causality is not always explicitly exhibited, it is true, in the sensile phenomena; nevertheless, the understanding intues in the object, presented by the phantasm to its observation, such latent efficiency of causation. It should never be forgotten, in connection with this controversy, that the intellectual intuition of even material entities is not a mere transfer from the sensile phantasm. The latter is little more than a necessary condition of the former. But the idea, as has been before suggested, is representative of that to which the phantasm cannot reach,—to wit, the essence of the entity; while the material accidents, which alone are represented in the sensile phantasm, can, with difficulty and only by a recurrence to the phantasm, secure any place for themselves in an intellectual idea or intuition of the understanding.

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ii. *Causal activity* is a thing which it is very difficult to precise or to describe; however evident is the fact of its existence. Balmez, in his *Fundamental Philosophy*, signalizes this difficulty with great clearness. 'To cause,' he remarks, 'it is said, is to give being. What means to give? To give is here synonymous with to produce. What means to produce? With this the explanations are at an end, unless one should wish to fall into a vicious circle, saying that to produce is to cause or give being. A cause, it is also said, is that from which a thing results. What is understood by resulting? To emanate. What is to emanate? To emanate is to proceed, to flow from another. Always the same thing; metaphorical expressions, which at bottom have all the same meaning[1].' Though this may in some measure be true; yet it would almost seem as though the illustrious Spaniard had exaggerated the strength of this exception against himself and the School which he has so acutely defended. For emanation expresses the passage of something real from the efficient cause into the entity of the effect. It is undoubtedly difficult to apply the concept of emanation, so understood, to the efficient causality of spiritual natures, more especially to that of the First Cause; but it must ever be borne in mind, that this idea, like so many others, is primitively derived from sensile perception, and that, as applied to material entities, the concept is more or less definitely realized. However, this censure by Balmez will be examined later on. It will be seen that the question, as at present proposed, is not strictly speaking a metaphysical one. Appeal has been made to the common sense of mankind and to individual experience as touching *the fact*, and not as to the philosophical definition of it. The idealist would dispute the reality of sensile phenomena. True philosophy maintains that the external accidents of material substance are the only objects of *purely* sensile perception. But all this is beside the mark. The matter is being tested for the moment by the general persuasion of mankind,—a test which no philosophy, worthy of the name, can afford to despise or ignore. Does the understanding of men in general intue efficient causation, or rather an emanation from the cause into its effect, latent underneath the phenomena of nature? Let us see. A man chances to be present at a lecture on electricity; and, during the course of an illustrative experiment, he sees electric sparks, apparently evolved

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[1] *Book I, ch.* 8, *par.* 88.

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from the circular plate of glass, pass by means of a conductor into a Leyden jar; where, having been in some way collected, the united force of the fluid thus amassed is applied to a live bird and instantly deprives it of life. If the supposed spectator knows ever so little of the matter, he does not doubt for a moment that the electricity which killed the bird emanated from the electrical machine. He knows that it did not originate with the Leyden jar, nor with the resinous rubber which half enveloped the glass plate, nor with the lecturer; but he is convinced that the force emanated from the glass plate, was collected in the jar, and thence brought to bear on the animal. Still more striking is the case of vital reproduction. In digenesis there is a physical and sensibly physical influx of the parents, as co-efficient causes, into the effect, by virtue of which the existence and individual as well as specific constitution of the embryo are determined. To say that these and the like emanations are not *certainly* causal, or that they have no other connection with the supposed effect than that of priority in succession, is to contradict the universal judgment of mankind and to invalidate all the general conclusions of the physical sciences. Paradox is not philosophy.

iii. Our ideas concerning spiritual natures in general and concerning our own spiritual nature in particular, are not primitively derived from sensile experience but from psychical facts. These facts reveal a higher range of Being, impervious to the sophisms of the idealist; where much is rendered luminous, which was before persistently obscure, for so long as thought was cabined within the limits of the material world. Such is peculiarly the case as regards the present question. It may indeed be difficult, (as has been already stated), to explain with sufficient accuracy the *nature* of the causal influx in the instance of spiritual Being, for the reason that the intellectual faculty, in the actual order, is so intimately dependent on the *phantasmata* derived from sensile perception; nevertheless, the *fact* of causal influx in spiritual Being is attested by an evidence that has no rival in purely natural cognition, because the object is *immediately* present to human consciousness. To take an instance: A thought involuntarily comes into my mind, which I desire to expel. My will energizes; and the thought is stifled. The facts are immediately present to my consciousness; and because the prior act of the will and the subsequent expulsion of the unwelcome thought are facts in that one simple entity which is myself, I simply intue the additional fact that my will was the efficient cause

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of, (i. e. necessary to, and sufficient for), the desition of that thought. Again: I have, it may be, forgotten the name of some place. I will energetically to remember; and it comes back to me. To take an instance of a somewhat different kind: I am seated; and I will to take a walk in a certain direction to a certain place. I begin to move my limbs in that direction. The will, i. e. the act of will, the sensations of motion, are immediately present to my consciousness; and I know, with a certainty which excludes all cavil or possibility of doubt, that my will was efficient cause of those sensations, and, (if the existence of my body is not a dream), cause likewise of the sensible motion of my legs, of the direction I take, and of my appointed destination. Nothing can surpass the certainty of this my conviction; even though I am unable to perceive in what precise way my will exercises an influence over the members of my body. Nor can this last-named fact afford just reason for surprise; since one would anticipate that the influx of spiritual Being would be of a higher and more recondite nature than that of material entities. Yet even this latter is not without its mystery.

iv. It is assumed from Ideology, that all our ideas of the visible entities which surround us are primitively derived from the senses and sensile perception; according to an old adage of the School, *Nihil in intellectu quod non prius in sensu.* Indeed, this concession might be somewhat extended; for it is in a certain sense true, that even psychological facts are *materially* derived at the commencement from sensile perception; inasmuch as this latter originally supplies the objects which awaken the faculties of the soul to determinate action. But it is sufficiently obvious that psychical facts, (i. e. the acts of the soul of whatever kind), are *immediately* present to consciousness without the intervention of any *species*, or form; and it is from these that man acquires a knowledge of his own spiritual nature, and thence, of other spiritual natures higher than his own.

II. It may be objected against the present Thesis, that the Declaration of it in the preceding pages is inconsistent with the doctrine of efficient causality as universally received in the Schools. For it would follow, from the explanation given, that there cannot possibly be any other efficient causality than that of the First Cause. The *Antecedent* is thus proved. An efficient cause, we are told, must be at once necessary to, and sufficient for, the pro-

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duction of the effect. But no finite Being is necessary to the production of whatsoever effect; since such effect could be immediately produced by the action of the First or Supreme Cause. On the other hand, neither is finite Being sufficient of itself for the production of any effect; since it can only act in virtue of the co-operation of the Infinite Being.

ANSWER. The *Antecedent* is denied. Now for the proof. The *Major* must be distinguished. That an efficient cause must be at once necessary *either conditionally or absolutely*, and sufficient *either conditionally or absolutely*, for the production of the effect,—is true. That an efficient cause must be *absolutely* necessary to, and sufficient for, the production of the effect,—needs a sub-distinction; the Supreme Efficient Cause,—yes: All, even secondary causes,—no.

The above distinction stands in need of some little explanation. The First Cause, then, is always *absolutely* necessary and *absolutely* sufficient for the production of any and every effect. He is absolutely necessary, because, (as will be seen later on), it is metaphysically certain that the activity of every secondary cause presupposes and postulates, as the condition of its evolution in act, the prevenient and co-operating action of the First Cause;—to say nothing of the necessity of His Action, in order that second causes may exist. He is absolutely sufficient; because He contains eminently in Himself all the virtue and energy that is to be found in finite Being. Second causes, on the contrary, are only *conditionally* necessary and *conditionally* sufficient; because the whole order of finite activity and production is conditioned by the Divine Will. With this distinction the difficulty disappears.

III. It has been objected, that the Principle of causality is not analytical. For no Judgment which affirms existence is analytical. But the Principle of causality affirms existence; since it bases the existence of an efficient cause upon the existence of contingent Being.

ANSWER. The *Antecedent* is denied. As touching the argument in proof, the *Major* must be distinguished. That no Judgment which affirms existence *i. e. of the subject and predicate after a certain sort, (to wit, of the subject as being not repugnant to it, of the predicate hypothetically)*, is analytical,—this must be denied. That no Judgment which affirms existence *simply or absolutely*, is

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analytical,— requires subdistinction. That which simply or absolutely affirms *the existence of the subject and predicate*,—granted; that which affirms simply and absolutely *the existence of some other third*, —here there is need of further subdistinction: If it so affirms such existence *explicitly* and *distinctly*,— granted; *implicitly* and *confusedly*,—no.

This answer likewise stands in need of some explanation. Wherefore let it be observed that, if a Judgment absolutely affirms the existence of its subject and predicate, it cannot be an analytical Judgment; because all existence, save that of necessary Being, is contingent. Neither can the solitary exception just mentioned give rise to an analytical Judgment or Principle; because the existence of necessary Being is not within the range of our actual intuition, but is synthetically deduced from the existence of contingent beings. Nevertheless, an analytical Judgment may affirm existence in two ways, viz. *explicitly* and *implicitly*. In its explicit affirmation of existence, the existence would necessarily be *conditioned*, so as not to exceed the limits of the ideal order. Thus, for instance, in the Judgment, *If contingent Being exists, necessary Being must likewise exist*, (which is purely analytical), existence is not predicated simply and absolutely either of contingent or necessary Being; but of contingent Being it is presupposed, not in act, but merely as not repugnant; while of necessary Being it is explicitly predicated,—not simply however, but *conditionally*; i. e. the existence of the latter is affirmed to be a metaphysical necessity, *on the supposition* that contingent Being exists. The existence of contingent Being is not affirmed; though its non-repugnance, is, of course, implied. In the *implicit* affirmation of an analytical Judgment, the existence supposed to be affirmed is absolute; nevertheless, such affirmation affects neither the subject nor predicate, but another whose existence is confusedly latent in the concept. Thus, *The idea of the possible includes both internal and external possibility*, is an analytical Judgment, wherein existence is predicated neither of the subject nor of the predicate; still, the concept virtually, though confusedly, includes the idea of an existing Being, (as we have already seen), Whose necessary Existence is the only real Foundation either of internal or of external possibility. Further: Existence, in this last example, is confusedly connoted in subject and predicate,—not as actual, but as not repugnant, or not impossible to either. For all real concepts are representative of real

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objects which either exist or, at least, are capable of existence, outside the objective representation of the mind.

Now, the Principle of causality does not categorically affirm the existence of its subject or of its predicate. In fact, it may be adequately represented under the form of a conditional, as thus: *If inceptive or contingent Being exists, its efficient cause must exist.* In such Judgment, nothing more is contained than the non-repugnance of existence, in the case of both the terms. Besides this, however, it virtually and confusedly includes the existence,—or rather, the idea of the existence,—of a First Cause.

IV. It has been further objected, that the Principle of causality is immoral; because it virtually denies the possibility of free-will. The *Antecedent* is thus proved. That Principle which affirms the necessity of the effect in presence of its cause, denies the possibility of free-will. But the Principle of causality is of this kind. Therefore, &c.

Answer. Of course the *Antecedent* and *Consequent* are denied. As to the proof of the *Antecedent*, the *Major* must be distinguished. That Principle, which affirms the *hypothetical* necessity of the effect in presence of its cause, (i. e. supposing the *actual* influx of the cause into its effect), denies the possibility of free-will,—no. That Principle, which affirms the *antecedent* necessity of the effect in presence of its cause, denies the possibility of free-will—there is need of a subdistinction: That Principle which includes such a supposition in the case of every cause,—granted; that Principle, which includes such a supposition in the case of some causes only, denies the possibility of free-will,—utterly denied.

This solution, like the preceding, needs explanation. If you conceive a cause, *formally* qua *cause*, you must necessarily suppose the effect; because the two terms are essentially relative. It would be a contradiction in terms that a cause, *hic et nunc* energizing *as* cause, should be without its effect; which would be tantamount to its being no cause at all. But, if you conceive an entity that is *capable* of causation, yet is not *at present* a cause; then, to affirm the necessity of the effect *in all cases*, would certainly go to destroy the liberty of the human will. But, to affirm such necessity *in some cases* in which the cause is necessarily determined to one effect, would not, as is plain, interfere with the liberty of the human will. Thus, for instance, it is physically necessary that *fire, supposing the required conditions to be verified, should burn dry wood;*

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because such is the one determined effect of fire, as a cause, on the above-named subject.

NOTE 1. The Principle of causality does not assert the necessity of an existing effect, by virtue of the existence of a potential cause; but, inversely, affirms the necessity of an existing cause, supposing inceptive or contingent Being, (which must, of its very nature, be an effect), to exist.

NOTE 2. The reader will profit by reading the entire tenth Book on causation in the *Fundamental Philosophy* of Balmez, There is an English translation of this Work by Brownson (Sadlier and Co., New York).

THE ULTIMATE PRINCIPLE IN ORDER OF REDUCTION.

As ideas, so analytical Judgments, or Principles, are reducible to an ultimate, of which the rest are simple determinations; under which, consequently, these latter are virtually contained. In the order of ideas, i.e. of simple Apprehensions, Being is the ultimate; since all other real concepts are truly determinations and contractions of this primary concept. Wherefore, Being virtually contains every form of reality,—or, to speak logically, every genus and every species,—within its transcendental periphery. Now, the present inquiry has been instituted for the purpose of determining which Judgment is,—and at the same time of showing that certain Judgments are not, (though they have been severally supposed to be),—the ultimate in the order of Principles.

To begin with a definition of the subject: The ultimate Principle will be that analytical Judgment which explicitly exhibits the one motive of assent common to all other subordinate Principles; so that these latter may be established against sceptical assault by reduction to the former, as to the evident and immovable foundation of all complex or judicial thought.

PROPOSITION CXX.

The Judgment, which has been designated the Principle of identity, if taken according to the obvious meaning of the word, cannot be a Principle at all, much less an ultimate Principle in order of reduction.

PROLEGOMENON.

Sir William Hamilton has given a prominence in our time to

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this so-called Principle of identity. He supposes it to be the 'Law' of all affirmation and definition; just as the Principle of contradiction, according to him, is the 'Law' of all negation and distinction. It is true that his doctrine on this head is *ex professo* limited to the logical science, and that he has laboured to substitute these two so-called 'Laws,' (a law and a Principle are not altogether the same thing), for the venerable *Dictum de Omni et Nullo.* And, considered solely under this aspect, it is obvious that any discussion of the theory in question would be out of place in these pages. But it will be seen, on careful examination, that the development of this theory is extra-logical, and lands us within the proper limits of metaphysical inquiry. In fact, as there has been occasion to remark before, the Hamiltonian novelties in Logic can all be traced to an apparent confusion touching the spheres of these two sciences and their respective wholes. In this and the two subsequent Theses, this theory of Sir William Hamilton will be considered under the threefold aspect which it has assumed in the exposition of the author; only, however, so far, as its consideration can fairly claim a place in the metaphysical science.

For our present purpose it will suffice to introduce a short quotation from this learned author's work on Logic; the detailed exposition of the theory now under review will be reserved for the next Proposition. The principle of Identity, he remarks, 'is expressed in the formula A is A, or A=A; and by A is denoted every logical thing, every product of our thinking faculty,—concept, judgment, reasoning, &c. . . . . This law may, therefore, be also thus enounced,—Everything is equal to itself[1].' There is, in this declaration, a seeming confusion of the 'Principle' of identity with that of equality; yet no two Judgments could well be more dissimilar. Accordingly, it will be well, for the sake of clearness, to separate or precise the three proposed formulas, by retaining the first (A is A), omitting the second for the present, and by modifying the third, so as to make it formally equivalent with the first. Wherefore, without prejudice to the theory of its author, it shall stand thus: *Everything is itself.* From the subsequent exposition it would appear as though Sir William Hamilton did not contemplate the naked tautology which his formula (*A is A*) exhibits. Nevertheless, it is necessary first of all to take that formula, as it stands,

[1] *Lecture v,* ¶ 14. *Vol. I.*

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according to its obvious rendering. Afterwards it shall be examined by the light of the explanation with which this author surrounds it. In this Thesis, therefore, the said formula is taken literally, as it stands.

THE PROPOSITION IS THUS DECLARED:—

I. A tautological Judgment cannot be a Principle; because a Principle is a Judgment either from which demonstration proceeds or on which demonstration reposes, and demonstration can neither proceed from, nor be founded on the strength of, a tautological Judgment. But the Principle of identity, taken in its obvious meaning, is tautological. The *Minor* of the above Syllogism is thus proved. Every Judgment, wherein the subject and predicate are in all respects identical, is tautological. But, in the formula, *A is A*, there is an absolute identity between the subject and predicate, *as such*; for the formula represents the subjective concepts more directly than the objected reality. The *Major* is self-evident, to those at least who are conversant with the laws of demonstration. For these laws require three terms, viz. the subject, the passion or attribute, and the definition. In the major premiss, the attribute is predicated of the definition; in the minor premiss, the definition is predicated of the subject. Therefore, in each premiss, there are two distinct terms; and, in the whole syllogism, three. But, in a tautological Judgment, there is only one term (*A*); and no other is even virtually contained. Therefore, a tautological Judgment cannot be a Principle in any sense; for it cannot actually enter into demonstration, neither could demonstration repose on the foundation of a solitary concept. Further, a Principle must be a Judgment; but *A is A* is a Judgment in nothing else but its logical form. *À fortiori*, it could not be the ultimate Principle on which demonstration in every field of science leans for support.

II. It cannot be doubted that the motive or evidence proper to analytical Principles, *as such*, must be virtually distinct from that which is contained in the simple idea of Being; otherwise, not only would there be an equivalence between the evidence of a simple apprehension and that of a Judgment, but there would be no sufficient reason for denying that a mere idea could become an analytical Principle, which is absurd. But the so-called Principle of identity exhibits a motive, or evidence, which is not dis-

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tinguished, save by a purely logical fiction, from the motive exhibited by the simple idea of Being. For Being, in that it is essentially one, can be conceived by purely mental reflection as essentially one *with itself*. Hence arises the notion of identity, as already explained in Book III, ch. 2, a. i. n. 2. But the so-called Principle of identity is nothing other than this notion transformed into the semblance of a Judgment. Therefore, it is no Principle at all; much less, the ultimate in order of reduction, or that first and universal Principle upon which the rest fundamentally depend.

PROPOSITION CXXI.

The so-called Principle of identity, if understood in a sense not tautological, cannot be the ultimate Principle in order of reduction.

Prolegomenon.

As it has been already remarked, Sir William Hamilton would seem to have understood the Principle of identity in a sense that is not tautological. Here, then, will be the place to quote so much of the explanation given as will enable us to determine the precise meaning attached by him to the term. The task is not a little difficult; for, in his exposition alike and in his formulas, the author now under review has offered indifferently the Principle of identity, in both its received senses, and the Principle of equality, as though they were all one and the same thing. Nevertheless, it is to be hoped that, by weighing with care the general bearing of his words, it may be possible to arrive at a more or less clear apprehension of his meaning.

'Let us consider:—looking at the whole and the parts together on the Principle of Identity, we are assured that the whole and all its parts are one,—that whatever is true of the one is true of the other,—that they are only different expressions for the different aspects in which we may contemplate what in itself is absolutely identical[1].'

Again, a little further on: 'If we reason downwards, *from a containing whole to a contained part*, we shall have one sort of reasoning which is called the *Deductive*; whereas, if we reason

[1] *Logic, Lecture xvi, ¶ lvii, Vol. I, p.* 301.

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upwards, *from the constituent parts to a constituted whole*, we shall have another sort of reasoning, which is called the *Inductive*[1].'

Once more, in an earlier paragraph: 'The Principle of Identity (*Principium Identitatis*) expresses the relation of total sameness in which a concept stands to all, and the relation of partial sameness in which it stands to each, of its constituent characters. In other words it declares the impossibility of thinking the concept and its characters as reciprocally unlike.' (Here we are introduced to a third Principle,—that of similarity, which is limited to the Category of Quality). 'It is expressed in the formula *A is A*, or $A=A$; and by A is denoted every logical thing, every product of our thinking faculty,—concept, judgment, reasoning, &c. The Principle of Identity is an application of the principle of the absolute equivalence of a whole and of all its parts taken together, to the thinking of a thing by the attribution of constituent qualities or characters. *The concept of the thing is a whole, the characters are the parts of that whole.* This law may, therefore, be also thus enounced,—Everything is equal to itself,—for in a logical relation the thing and its concept coincide; as, in Logic, we abstract altogether from the reality of the thing which the concept represents.' (Not so; we abstract altogether from the thing itself, and from its representation in the concept; which latter is the *matter* of the thought.) 'It is, therefore, the same whether we say that the concept is equal to all its characters, or that the thing is equal to itself.' (This is a fundamental mistake). 'The law has, likewise, been expressed by the formula,—In the predicate, the whole is contained explicitly, which in the subject is contained implicitly.'

'The logical importance of the law of Identity lies in this,—that it is the principle of all logical affirmation and definition[2].'

Now, from the quotations here given it would appear that Sir William Hamilton, spite of his professions to the contrary, had before his mind, not subjective, but objective identity; and objective identity, moreover, only under a special point of view. There is, evidently enough, no identity between the concept, as such, of a being, and the concept of its parts or, if you will, characteristic notes. For instance, in the Judgment, *This dog is a substance*, no one in his senses would venture to maintain that the two ideas, *This dog*, and *substance*, are in themselves identical. Neither could

[1] *Logic, Lecture xvi, ¶ lvii, Vol. I, p.* 302.

[2] *Lecture v, ¶ xiv, p.* 79.

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it be seriously maintained, that the realities, respectively represented by these two ideas, are absolutely (i.e. in themselves) identical. But it is true to say that in the object, (which is the subject of the Judgment), they are *de facto* identified; forasmuch as *This dog* and *substance* in its judicial synthesis with the subject, (i.e. as in *This dog*), are identical objectively. Now, Sir William Hamilton considers the subject of a Judgment as a whole; and the predicate, which he supposes to invariably exhibit 'the constituent characters' or 'constituent qualities,' as parts which together constitute the whole. The phraseology is not felicitous. For the parts of a logical whole are limited to genus and difference, which do not exhaust the predicables; while the only parts of a metaphysical whole are the formal and material, and these do not include the attributes or passions, which are, nevertheless, the main subject of determination in the demonstrative syllogism. Moreover, there is great apparent confusion in the statement,—'The concept of the thing is a whole, the characters are the parts of that whole.' For there would seem to be an unconscious passing from the subjective to the objective. The concept, *qua* concept, is a logical whole; the thing conceived may be, according to its nature, either a metaphysical, physical, or conceptual whole. To which of these kinds are we to attribute the characters as parts? Not to the logical whole; because the subjoined words, *of a thing*, would be foreign to such application. But, if they are to be attributed to the thing, or object, conceived; then one would have expected in the apodosis, 'the concept of the characters are the parts of that whole.'

However, apart from the particular modes of expression, it would seem as though this writer's meaning may be gathered with sufficient clearness. He maintains, and justly maintains, that there is, in every true affirmative Judgment, an objective identity of subject and predicate; for the predicate, in its actual synthesis with the subject, is, and is cognized to be, one with the latter. In other words, the Judgment is true. Presuming, therefore, that such is the meaning which Sir William Hamilton intended to convey, there are certain observations which it will be profitable to subjoin.

i. The formula, A is A, must go; for it in no wise represents the virtual identity which is intended. To borrow an example from the author: Let us suppose the Judgment, *Man is a material*,

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organized, animated, rational, Substance on this earth. It would be folly to say that the ideas of *man, material, organized, animated,* &c., are in themselves identical the one with the other; though the last five are identified with the first in the Judgment objectively. The formula should rather be A is a+b+c+d+e. However, it might possibly be urged that the entire predicate is represented by A; since, in no other being save man is the same precise collection of characteristic qualities discoverable. This is undoubtedly true; but it is by no means sufficient to justify the denotation of two conceptual representations, so pronouncedly distinct, by the same symbol.

ii. But there are yet more weighty reasons for dismissing the said formula. For the class of analytical Judgments which have been considered in the preceding paragraph covers very limited ground. It includes definitions merely. In by far the greater number of analytical Judgments, there is no such adequate correspondence between subject and predicate. Accordingly, Sir William Hamilton, apparently for the purpose of including this second class, has introduced a notable modification into the explanation given of the Principle of identity, by subjoining that it expresses '*the relation of partial sameness in which a concept* (of a thing) *stands to each of its constituent characters.*' It follows then,—or, rather, it is admitted,—that the identity in such cases does not apply to the whole reality of A, but is partial only. Wherefore, 1. The second A in *A is A*, as symbol either of the subjective or objective concept, is not identical with the first A, as symbol of the subject. For instance, in the Judgment, *Man is an animal*, the concept, *Animal*, (the second A), even if assumed as in the subject, is not identical with the concept, *Man*, (the first A). 2. Though the subject (*Man*) is universal in its *extension*, it is not universal in its *intension*. In other words, though it is true that *All men are animals;* it is anything but true that *All man is animal.* Wherefore, it should be expressed strictly as follows: *Something of man* (*something that is man*) *is animal.* The more accurate formula, accordingly, would be, *A—x is a in A*; for, not all that is *man* is *animal*, and *animal* is not identified with *man* save in *man.* Further, if the quantification of the above proposition is to be measured by the *metaphysical* whole, the Judgment is evidently a particular. As, then, for similar reasons, Sir William Hamilton has introduced his new Modes, which are measured by

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the totality of intension; he would have been more consistent with himself, if he had added a new quantification of the subject, measured by the same totality. It may be possibly objected, that, in order to meet the requirements of Judgments similar to the one just given, he has submitted the predicate to quantification; but it is enough to reply, that such quantification is measured by the whole of *extension*, which does not meet the exigency of the case. Moreover, there are other kinds of analytical Judgments, wherein the extension of the terms is the same and, consequently, there is no place for the quantification of the predicate; yet there is no identity, although a synthesis, of these terms. Such are all Judgments in which an attribute, or passion, is predicated either of the subject or its definition. Thus, for instance, *All bodies are extended*, is a Judgment in which the terms are of equal extension; so that it can be simply converted. Yet, who would say that the subjective or objective concept of *Body* is identical with the subjective or objective concept of *Extension?* The formula in this and similar Judgments would be, *Something proper to A is B.*

iii. The formula, *A is A*, has special difficulties, when applied to synthetical Judgments; nevertheless, its advocate submits these, together with all other, concepts, to it as to their final criterion. For, in such Judgments, the connection of the predicate with the subject is contingent, casual. Hence, it is conditioned by time, or place, or circumstance, &c. To take an instance: *John is sitting down.* But, now again, *John is not sitting down.* If, therefore, (applying the formula, *A is A*, to these Judgments respectively), the second A is representative of *sitting down* in the former Judgment, it will also be representative of *not sitting down* in the latter. Hence it will follow that *A is A*, and that *A is not-A*; consequently, the second A is the second not-A,—say, *A′ is not-A′*. Nor will it remedy matters, to object that the identity is conditioned by time; for, let the condition be expressed, the difficulty will remain. *A is now A* (i.e. A is now itself); *A is now not-A* (i.e. A is now not-Itself). One can understand how A is *now* identified in some way or other with B, and *now* again with not-B; but it surpasses all comprehension, how A can be *now* A and *now* not-A, i.e. the negation of itself.

iv. The above arguments are, for the most part, equally conclusive against the other formula, A=A. There are other special

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reasons for the rejection of this Principle of equality, which will appear in the sequel.

v. It would be obviously out of place here to enter upon a discussion touching the merits of this theory in its relation to the logical science. Suffice it to say that, as applied to the forms of thought, it seems to have even less verisimilitude than as applied to concepts or to the reality which constitutes their object.

THE PRESENT PROPOSITION IS THUS DECLARED.

The fundamental Principle, on which all philosophical thought in ultimate analysis absolutely reposes, must explicitly exhibit the necessity that Being should be, if it is. Without perfect security for this, all process of thought would become nugatory, nay, impossible. But the Principle of identity, even understood in a non-tautological sense, does not explicitly exhibit the necessity that a Being should be, if it is. That which it does explicitly exhibit, is the identity of a thing with itself; and perhaps, as a consequence, its reality. Yet the idea of the identity of Being with itself, or even of the reality of Being, does not explicitly represent the necessity that Being should be, if it is. Thus,—to take an example in the concrete,—it is said that *Two and three are five*. The Principle of identity assures us, (we will suppose), that $2+3$ and 5 are one and the same thing. Be it so; but what security does it give that $2+3$ may not at once be 5 and 7, or any other number? Yet, without such security, multiplication-tables, arithmetic, algebra, are a simple farce. Similarly: It has been maintained in a former Proposition, that the concept of change, under whatever form, necessarily carries with it the idea of an efficient cause. But why? Is it because change is change; or because Being subject to change is identical with inceptive or contingent Being? By no means. If the analysis there instituted be carefully considered, it will be seen that the concept of change includes the idea of an efficient cause, because it is impossible that any entity should be at once new and not new. In other words, the Principle of causality, like every other Judgment analytical or synthetic, reposes on the above mentioned motive, viz. on the necessity that a thing should be, if it is.

COROLLARY.

It follows from the preceding declaration, that the Principle of identity cannot be, even *co-ordinately*, an ultimate in order of

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reduction. The insertion of this Corollary has been rendered necessary by the peculiar theory under review. Sir William Hamilton does not, in fact, claim for the said Principle an exclusive priority or, in other words, the position of a solitary ultimate; however inconsequent he may occasionally prove himself to be. For he says, 'The law of Identity and the law of Contradiction are co-ordinate and reciprocally relative, and neither can be educed as second from the other as first; for in every such attempt at derivation, the supposed secondary law is, in fact, almost necessarily supposed. These are, in fact, one and the same law,—differing only by a positive and negative expression[1].' It is plain, then, that this author maintains the precedency of two co-ordinately ultimate Principles, each independent of the other:—the one lying at the root of all affirmative, the other at the root of all negative, analytical Judgments. It has been already seen that Sir William Hamilton does not limit their application to analytical Judgments; the restriction has been here adopted, in obedience to the requirements of the metaphysical science. The same declaration, which has been made in proof of the Proposition, will serve equally for the present Corollary. It was with a view to this, that the illustrations were exclusively taken from affirmative Judgments.

DIFFICULTIES.

I. The Principle of identity, understood in a sense not tautological, is the ultimate in order of reduction; so far as regards all affirmative analytical Judgments. The *Antecedent* is thus proved. That Principle, which is the fundamental reason for truly affirming the synthesis of predicate and subject in such Judgments, is the ultimate in order of reduction, so far as regards affirmative Judgments. But the Principle of identity is the fundamental reason for such affirmation. The *Minor* is thus declared. In every affirmative Judgment and, *à fortiori,* in every affirmative analytical Judgment, the fundamental reason why the predicate is truly affirmed of the subject, is this; that the reality, conceptually represented by the predicate, is objectively identical, (partially, at least), with the reality conceptually represented by the subject. Thus,—to take an instance,—in the Judgment, *All plants are living things*, the ultimate basis for the truth of the affirmation is, that

[1] *Logic, Lect. V. pp.* 82, 83.

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living thing is objectively identified with *plant*. This identity finally and absolutely establishes the truth of the affirmation. If I should be asked, why I assert that *Plants are living things*, my only answer will be, *Because they are*. There is an objective identity, if only partial, between plants and life in plants, which the mind recognizes as the final justification of its assertion. It is impossible to proceed further. Whatever objection, therefore, may be made to the formula or formulas by which the Principle is symbolized, (and this is a matter of comparatively small importance); it would be difficult to deny the efficacy of the Principle itself in the case of affirmative Judgments.

ANSWER. The *Antecedent* is denied. As touching the proof, the *Major* requires to be distinguished. That the Principle, which is the fundamental reason for truly affirming the *exclusively necessary* synthesis of predicate and subject in such Judgments, is the ultimate in order of reduction,—granted. That the Principle, which is the fundamental reason for truly affirming the *simply actual* synthesis, is the ultimate,—I subdistinguish: The formal and *conceptually* fundamental reason,—let it pass; the material, as it were, and *objectively* fundamental reason,—again I subdistinguish: Such fundamental reason is the ultimate basis for the objective truth of the Judgment,—let it pass; such fundamental reason is the ultimate Principle upon which the true Judgment conceptually rests in final analysis,—denied.

The *Minor* is contradistinguished. That the Principle of identity is the fundamental reason for truly affirming the *exclusively necessary* synthesis of predicate and subject in affirmative Judgments,—denied; that this Principle is the fundamental reason for truly affirming the *actual* synthesis,—I subdistinguish: That it is the material and *objectively* fundamental reason,—let it pass; that it is the formal and *conceptually* fundamental reason,—denied.

This answer, given briefly in form, needs explanation. So, then; a given Principle may, or may not, be the fundamental reason why the predicate in a Judgment should be truly affirmed of the subject; and yet not include any, or at least sufficient, reason why it could not possibly be otherwise, or why simultaneous affirmation and negation should be an absurd impossibility. This it is precisely that is intended by the phrase, *exclusively necessary*. But, if the Principle proposed does not exhibit a sufficient reason for this exclusively necessary synthesis, it cannot lay claim to be the ulti-

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mate in order of reduction. Again: If a Principle is the fundamental reason for truly affirming the *simply actual* synthesis of predicate and subject, it may be such in two ways. It may be *formally* and *conceptually* the ultimate reason for the true affirmation. In such case, it may be open to doubt whether it could not be the ultimate Principle; because the formal motive in the mind of the thinker, which justifies the affirmation, might perhaps virtually include a reason, implicit at least, for the affirmation of an exclusively necessary synthesis. But, if the said Principle is only *materially* and *objectively* the fundamental reason for truly affirming such synthesis, i.e. if the reason is in the object only, not in the concept; it is false to say that such a Principle can be the ultimate Principle in order of reduction, albeit it may possibly be an ultimate reason for the ontological truth of the object as presented to the mind.

Now, the Principle of identity is not, even virtually, the fundamental reason for truly affirming the *exclusively necessary* synthesis of predicate and subject; but only the *actual* synthesis. For, simply because A is A, it in no wise follows that A cannot at the same time be not-A. Moreover, if it should chance to be the ultimate reason for truly affirming the *actual* synthesis of predicate and subject; it is not such, as a Principle formally sustaining the Judgment, but as a Principle of Being which is really undistinguishable from ontological unity. For identity is simply the unity of Being with itself. Wherefore, the Principle of identity is rather the ultimate reason (if ultimate reason at all) of the truth of the object, than of the truth of the synthesis in the Judgment. It is true for instance, objectively, that *All men are animals;* because *animality* in man is objectively the same as *rational animality*. Accordingly, the so-called Principle of identity is nothing more or less than the reality, truth, or unity of Being, affirmed by a reflex Judgment; and contains nothing which had not been previously contained in the idea of Being and its attributes. It is not a Principle at all, strictly speaking. For a Principle is a Judgment; and, as such, postulates two terms. The above explanation will suffice to explain the contradistinctions embodied in the answer to the *Minor* of the objection.

II. It will not improbably be objected by a disciple of the Hamiltonian views, that a grave injustice has been committed against their learned author in the present Thesis. For the simple

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fact is, that Sir William Hamilton has been solely occupied, in the passages quoted, with the task of determining the primary law of the affirmative syllogism, and of discovering a substitute for the, to him at least, unsatisfactory *Dictum de omni et nullo;* whereas it has been gratuitously assumed, that he is claiming for the Principle of identity a co-ordinate supremacy within the sphere of ontology. Thus the two spheres of Metaphysics and Logic have been confounded, apparently for the mere purpose of bringing in a bill of indictment against this illustrious writer. The mistake, moreover, is the less excusable, because Sir William Hamilton, in the very places which have been selected, expressly disclaims the pretension that the law of contradiction is a metaphysical Principle, and asserts that it can only boast of a logical value.

ANSWER. It seems necessary to observe, first of all, that philosophical inquiry abscinds from that which is purely personal. Whether, in his treatment of this question, Sir William Hamilton did, or did not, confine himself within the strict limits of Logic, is a matter of comparatively small importance. Nor would one, who is endeavouring to recall the mind of England to the old philosophy of the School, be too ready to quarrel with one that laboured so effectively in a similar direction. Yet, even supposing that a wrong interpretation has been given to his words, the possibility that his doctrine may be so misinterpreted makes it a matter of duty for the metaphysician to guard the student against the supposed error and its consequences. But, again, Sir William Hamilton has certainly given just occasion for the interpretation complained of. For (*a*), he is perpetually introducing the object of thought, though at the same time protesting against its relevancy within the sphere of Logic. '*Constituent qualities,*' '*characters,*' '*constituent characters,*' '*notes of the object,*' are terms which point to Metaphysics, not to Logic. When he speaks of '*thinking of a thing by the attribution of constituent qualities or characters,*' and adds that '*the concept of a thing is the whole, the characters are the parts of that whole,*' when he further declares that the law of identity may be '*thus enounced,—Everything is equal to itself,*' he is, plainly enough, passing beyond the boundaries of pure Logic, which has nothing to do with '*thing,*' or '*characters,*' or with '*attribution of constituent qualities*' (because these constitute the *matter* of thought and belong to it *as representative*), but limits itself to a contemplation of the laws, or forms, of ideas and concepts only, abstracting wholly from the matter.

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Neither does it mend matters to subjoin that '*we abstract altogether from the reality of the thing which the concept represents. It is, therefore, the same whether we say that the concept is equal to all its characters, or that the thing is equal to itself*[1].' For pure Logic not only abstracts from the *reality* of the thing; but from *the thing itself.* Nay, more; it only abstracts from the reality of the thing, *because* it abstracts altogether from the thing, (i.e. the object of the thought and from all that is representative in the thought). Hence, it is not the same '*whether we say that the concept is equal to all its characters, or that the thing is equal to itself.*' For Logic contemplates the logical characters only of thought, considered purely according to its form or law; not the characters, or constituent qualities, of the object represented. Considered under this second aspect, thought becomes the formal property of Ideology. When, however, it is question of the equality of a thing (or reality) with itself, we have entered within the proper sphere of Metaphysics. (*b*) It will be found, after careful investigation, that the whole and parts announced in the quotations, and which form so important an element in the Hamiltonian theory, are a metaphysical whole and metaphysical parts,—not a logical whole and logical parts. (*c*) The Principle of contradiction has been generally accepted by the ancients and by the School as the ultimate in scientific and metaphysical demonstration; and with reason. Since, then, Sir William Hamilton has claimed for the Principle of identity the same place in affirmative Judgments which he claims for the Principle of contradiction in negative Judgments, it follows that the sphere of the former must be the same as the sphere of the latter, viz. metaphysical. (*d*) The new system of syllogistic modes is strictly metaphysical; yet no one can fail to see its dependence on the Principle of identity which it is intended to subserve. Nor can it avail to urge, as in the objection, that Sir William Hamilton declares the Principle of contradiction to be logical, not real,—formal, not metaphysical; because, throughout his Logic, he has systematically confounded the two orders. This may, perhaps, account in some measure for the contradictory statements that he makes touching this Principle. Thus, in his Logic he tells us, as we have seen, that 'the law of Identity and the law of Contradiction are co-ordinate and reciprocally relative, and neither can be educed as second from the other as first.' Yet, in his Metaphysics,

[1] *Logic, Lect. V, Vol. I, p.* 80.

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he assures' us that the Principle of contradiction is 'the highest of all logical laws, in other words, the supreme law of thought[1];' and then, again, in a fragment already referred to, pronounces that 'it is partial, not thorough-going .... and is, therefore, all too narrow in its application as a universal criterion or instrument of judgment[2].'

PROPOSITION CXXII.

The Principle of equality cannot be the ultimate Principle in order of reduction.

PROLEGOMENON I.

The Law of equality is usually expressed in this wise: *Things which are equal to the same are equal to one another.* Here, at length, a Principle is set before us, which seems to carry on its front a capacity for becoming the basis of all demonstration; for it exhibits not two only but three terms. In this respect it stands on a par with the famous *Dictum de Omni et Nullo.* Moreover, from the nature of the axiom, its terms must be respectively distinct, one from another. For equality essentially connotes distinction. No one would ever dream of univocally predicating the equality of a thing with itself. Those things, therefore, which are conceived as equal, must be likewise conceived as distinct. Hence, equal things are *simply and entitatively* distinct; and the same, only *in a certain respect.* In what respect are they the same? In *Quantity.* Yet the sameness is not in the *entitative Quantity* of each; for that is as distinct in each from the rest of the quantities, as is the Being which it informs from the quantified others. It is identity of *measure* in quantity, that constitutes the sameness of things equal. Nevertheless,—and this is the principal point to be now considered, —equality is limited to the Category of Quantity. We speak of equal height, of equal weight, of equal number, of equal age. When the term is otherwise employed, as it not unfrequently is, it is applied either metaphorically or analogously. That which, in the Category of *Quality,* answers to equality, is called *likeness* or *similarity.* That, again, in the Category of *Substance,* which comes nearest to the concept of equality, is *specific* or *generic identity.* For these latter include a real distinction between the entities that

[1] *Metaph. Lect. XXXVIII, Vol. II, p.* 368. [2] *Ibid. Appendix II, p.* 534.

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are the terms of identity. Since the Principle of equality is limited to the Category of Quantity, it is not surprising to find that it is the principal basis of mathematical demonstration.

Prolegomenon II.

Sir William Hamilton has apparently assumed that the Principle of equality, in its simplest expression, and that of identity are one and the same; for he proposes indifferently the two formulas, as legitimate expressions of his favourite law, viz. A is A, and A = A. He further declares, in the quotation already given, that the law of identity *may be also thus enounced,—Everything is equal to itself.* But, surely, there is here some considerable confusion of ideas and terms. For equality, as has been already pointed out, is limited to the Category of Quantity; identity, on the other hand, is co-extensive with Being. Again: equality postulates distinct terms, real or individual; identity (which Sir William Hamilton contemplates) essentially supposes one term only. Hence, the concept of identity may be reasonably represented by the formula, A is A; but that of equality can only be represented by A=B, as indicative of the necessary distinction between the terms. It might possibly be objected by a disciple of the Hamiltonian theory, that in analytical Judgments, identity, like equality, supposes a real distinction in the terms identified. For, in such Judgments, the identity is necessarily either generic or specific; it cannot be individual. But, according to the admission made in the preceding *Prolegomenon*, species supposes individuals who are really distinct but conceptually identical in their nature; and genus equally supposes species which are mutually distinct, but conceptually identical, in the material part of their essence. This plea, however, is not solid. For the specific identity of individuals, (and the same may be said of the generic identity of several species), *qua* identity, is conceptual, not real. That which is the real foundation of the concept is, a *similarity* in the essential notes of each respectively. But similarity, like equality, connotes two distinct terms. In applying, however, the Principle of identity or of equality as measured by extension, the idea of similarity and of the thereby connoted distinction of subordinates disappears. Again: In the theory at present under examination, the specific or generic identity is not taken *distributively*, but *collectively*. Hence there arises a conceptual *singularity*, —not numerical, but specific or generic. Thus, the Judgment, *Man*

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is the same as animality in man, or, *as some animality* (which is the way in which we are lessoned to read the Judgment, *All men are animals*, in order to reduce it to the new theory), singularizes the genus, as it were, by the act of identifying it with one of its own species. It should be added that if the genus were not thus singularized, it is inconceivable how the formula, *A is A*, could from any point of view symbolize the Judgment. To make the matter clearer, let us take an example from a *concrete*, not an *abstract*, Judgment; and let the predicate be quantified in the recently approved fashion. The old instance will serve our turn; *All men are some animals.* Under this form, the subject is not distributed. For, though it is true to say that all men, taken collectively, are some animals; it is not true that this man is some animals. Yet, if the particularizing prefix be omitted, there is no equality or identity.

THE PRESENT PROPOSITION IS PROVED BY A TWOFOLD ARGUMENT.

I. That Principle, whose motive is limited to a particular Category, cannot be the ultimate in order of reduction; since the ultimate must exhibit a motive common to all analytical Principles and Judgments of whatever Category. But the Principle of equality is limited to the Category of Quantity. If, however, it should be said that the term, *equality*, is used analogously according to the tenor of Sir William Hamilton's explanation, the answer is apparent. In such case, the equality is the equality of sameness, which is no equality at all; and we are referred back to the already discarded Principle of identity.

II. The law, or canon, of equality, viz. *Those things which are equal to the same, are equal to one another,* is not the basis of scientific demonstration; as it certainly is not the basis of the syllogism. It is sufficiently obvious, and otherwise stands confessed, that it could not be applied to *indirect* demonstration, or *Reduction to the absurd.* But can it be legitimately applied to *ostensive* demonstration? Thus much may be at once admitted that, if the said equality is measured by the *logical* whole, (i. e. by the whole of *extension*), this canon is verified in the instance of *most powerful* demonstration, (as it is called), i. e. of that primary demonstrative syllogism from which all the other successive syllogisms in one and the same series proceed. For, in this mother-syllogism, all the propositions—the conclusion as well as the two premisses,—are simply

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convertible. In the *Major Premiss*, the attribute is predicated of the definition; in the *Minor*, the definition is predicated of the subject defined; while, in the *Conclusion*, the attribute or passion is predicated of the subject. Evidently, therefore, there is an equality of *extension* between the two terms of each Judgment and, in consequence, between the three terms of the syllogism. If, then, we represent the subject by S, the attribute by A, the definition by D, according to the whole of extension, we shall have D = A, S = D, ∴ S = A; that is to say, *Things that are equal to the same are equal to one another.* But, first of all, it should be remembered that, although the equality is logical, it is quite accidental to the laws, or forms, of thought; and owes its origin to the matter, i. e. to that in the thought which is representative. Hence it is that demonstration finds no place in pure Logic. For it is the application of the universal syllogistic forms to a definite subject-matter; and the subject-matter is extra-logical. Then, again, Metaphysic has nothing to do with the logical whole. Yet our present search is for the ultimate metaphysical Principle, as exhibiting the motive common to all scientific, or analytical, Judgments. The measure of equality, therefore, ought to be the whole of comprehension; not the whole of extension. But, thus measured, not even will the *most powerful* demonstration satisfy the canon of equality. For, although it may be allowed that the *Minor* exhibits a certain sort of equality; nevertheless, it is impossible to affirm the same either of the *Major* or of the *Conclusion.* In the *Minor,* the definition, (as we have said), is predicated of the subject defined; therefore, the reality, represented by each term, is equal. Not without reason, however, has it been said that this premiss only exhibits *a certain sort* of equality; for, though the reality represented is equal, the respective representation of the reality by each term is not equal. In the *Major,* on the other hand, and in the *Conclusion*, there is no pretension to such equality. For, in the former, the attribute is predicated of the definition; in the latter, of the subject. But no one can fail to see that an attribute or passion, which is outside the essence, does not exhaust the reality of the subject and its definition. Thus, for instance, in the following demonstration,—*All rational animals are capable of laughter: Man is a rational animal: ∴ Man is capable of laughter,*—who would seriously maintain that *capacity for laughter* exhausts all the reality represented in the concept of *man* or in that of *rational animal?* If the Principle of

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equality has such slender influence over *most powerful* demonstration, or the mother-syllogism, it has still less over the dependent syllogisms. But, as yet, reference has been made only to the first and most perfect species of demonstration (*Propter Quid*—διότι), wherein the attribute is demonstrated of the subject by means of the cause. Should the examination be transferred to the second species (*Quod* — ὅτι), wherein causality is demonstrated of the subject by means of the effect; the canon of equality would be entirely at fault. Consequently, there is no likelihood of its being the ultimate Principle in order of reduction.

NOTE. It is worth noticing that, in this last proof of the Thesis, the term, *equality*, is used analogically. The logical and metaphysical wholes are regarded as quantities; and so, as subject to equality and inequality.

PROPOSITION CXXIII.

The so-called Principle,—Being creates existences, or, as it has been otherwise expressed,—God creates the world, is not the ultimate in order of reduction.

PROLEGOMENON.

Gioberti has given us the Judgment, which forms the subject of the present Thesis, under its first expression. The modification, or second expression, of it as given in the Enunciation is due to Father Romano, and was afterwards adopted by the American writer, Mr. Brownson. All three maintained that this Judgment, under one or other of its forms, is the ultimate Principle which underlies all thought.

THE PROPOSITION IS PROVED BY THE FOLLOWING ARGUMENTS:

I. If the aforesaid Judgment were the ultimate Principle of which we are in search, it would follow that there could be no science and, so far at least as man is concerned, no necessary truth. For, creation is an act of free-will; and, therefore, contingent in its results. Consequently, the Judgment in question would be contingent and synthetical. But no derivative Judgment can rise above its source. Consequently, all human Judgments would be contingent; and, out of such concepts, the formation of science is impossible. For science deals only with the necessary and eternal.

II. The above argument is further confirmed. Science has

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nothing to do with created existences, *as such;* because they too, like the creative act which they presuppose, are contingent. It is not, therefore, possible that the ultimate Principle of scientific thought should be a Judgment wherein created existences, *as such*, form part of the predicate.

III. The truth of the preceding arguments may be presented under an opposite point of view. In the hypothesis that such Judgment were the ultimate basis of thought, created existences would be necessary, immutable, eternal. They would, consequently, be God; so that the predicate in the said Judgment would be identical with the subject. The *Antecedent* is thus proved. A first Principle must be analytical; i.e. the idea of the predicate must be essentially contained in the idea of the subject. Wherefore, in the present instance, the idea of *created existences*, or of *the world*, must be essentially contained in the idea of *Being*, or of *God*. This once admitted, creation and created existences are essential to God. But that which is essential to God, is God. Why not add that, in this case, the Principle of identity would have the prior claim; seeing that the Judgments in question would be resolvable into it?

IV. The theory in question is repugnant to common sense. No one could be persuaded that, when a child, for instance, first forms its confused concept of *Being* or *Thing*, there is lurking in its mind, underneath this simplest and most vague idea, the Judgment that *God creates the world*. So, again, if a farmer should pronounce that *The crop of hay this year has been a very fine one*, is it not overmuch to require us to believe that underneath this assertion there lies, however implicitly, that other Judgment, *Being creates Existences?* To take a fresh illustration from another and higher order of truths: We form the Judgment that *Being is one, true, good*. Where is the necessity, whence the opportuneness, of introducing the concept of creation here? Surely, it is possible to conceive of God as Being, as One, as True, as Good; quite irrespective of any, even virtual, concept of a creation. Here, however, an objection might possibly be made; yet of such little worth, that one is half ashamed to notice it. It may be urged that the child cannot think *thing* or any other thought, unless itself has been previously created. Similarly, the farmer cannot pronounce judgment on the crops, save on the presupposition that he as well as the crops have been created. The same holds good in the case of the man who

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judges God to be Being, the One, the True, the Good. But who can fail to see that there is, in such an objection, a confusion between the real and the conceptual order? In order to think, of course, I must first be. In order that I may be able to judge about crops of hay, *they* must first be. But the existence of the one or the other, though a prerequisite or a necessary condition, does not enter into the formal act of the Judgment. The two are preliminary, if you will; but they are not elements in the concept itself. In order that a man may have a draught of water, recourse must be had (we will suppose) to the pump; yet, for all that, he does not swallow the pump.

V. The theory under discussion supposes an intuitive knowledge of God in the actual order. It is, therefore, based on a false hypothesis. All our knowledge of God, of His Existence, Nature, Attributes, (apart from a supernatural revelation), is arguitive,—a deduction from the things that are seen. We know of Him only through His works. All our ideas, in the actual order, are primitively derived from sensile perception; and they cannot break entirely loose from their source. We are utterly unable, as things stand, to intue the purely spiritual.

VI. The theory in question is based upon a philosophical error. There are two ideas of Being, as separate from each other as are the two poles. The one is that most general, confused, uncontaining, notion of Being, which is conceived by the child when first it begins to think. That same idea comes afterwards into the possession of the philosopher, and is rendered clear and explicit. Yet, spite of all, it is a Transcendental; and includes the Creator and the creature,—the Infinite and finite,—the Necessary and the contingent,—the Eternal and temporal, under (if one may use the expression in such connection) a common denominator. The concept has closest affinity with the whole of extension, while going beyond it. But there is another idea of Being, which most nearly resembles the metaphysical whole, or whole of intension, though going beyond it. For it includes all reality within itself in infinite perfection; and only is not the metaphysical whole, because it is not specific, but singular and individual. Yet is it a singular that includes all genera and species virtually and eminently, but essentially, in itself. It is the idea of 'I AM WHO AM.' Now the theory, of which we are at present speaking, confounds the one idea of Being with the other. The former, it is true, is first and last in all

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human thought; the latter is the outcome of an elaborate process of deduction. The one is an intuition of the understanding; the other is a conclusion of reason.

PROPOSITION CXXIV.

The Principle of contradiction is the ultimate in order of reduction.

PROLEGOMENON.

That Principle which is ultimate in order of reduction is first in order of thought and in genesis of science.

THE PROPOSITION IS THUS DECLARED.

I. The ultimate, or most universal, Principle must necessarily embrace the most universal object; and the first Principle will exhibit this most universal object in its primary relation. Now, by common consent, Being *as* such (i.e. independently of, and prior to, its three attributes, or passions) is the most universal object and, consequently, the most universal subject of a Judgment. It remains, then, to discover the primary relation (so to say) of Being. It has been already pointed out in the thirty-second Proposition [1], that, as St. Thomas teaches, first in order of scientific thought comes the idea of Being, then of Not-Being; thence proceeds the idea of division; from which, in turn, the idea of unity. The idea of unity gives birth to that of distinction; and from these last is generated the idea of multitude. It has been further shown, in the third Book, that the two other Transcendental attributes of truth and goodness are consequent upon unity in scientific genesis. To repeat, then: Being is the first and most universal subject of thought; and the ultimate Principle in order of reduction, or the first Principle in the order of philosophic cognition, will be that Judgment which represents Being in its primary relation. Yet, if this be true, it would seem as though the 'Principle' of identity must be, after all, the ultimate of which we are in search. For is not the first relation discoverable in Being its relation of sameness to itself? No, certainly not; for the idea of identity, as we have already seen, is *consequent* upon that of unity, and is really nothing else than a reflex concept of

[1] *Book III, ch. 2.*

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this latter. Neither can there be any, even conceptual, relation; for relation postulates two distinct terms. What, then, is the primary relation of Being? Evidently its relation to Not-Being, whence arises division and, as a consequence, the first possibility of two terms of thought. To this, however, it may be objected, that the second term (which is Not-Being) is conceptual only, not real; whereas one would think that the ultimate philosophical Principle must postulate two real and really distinct terms. Nevertheless, on closer inspection it will appear that, though the notion of Not-Being is formally and explicitly a purely conceptual idea *in itself;* yet, in its relation to Being, it has a real foundation. It, in fact, assumes the form of a privative. For, when it is affirmed, according to the Principle of contradiction, that *It is impossible for an entity at once to have essence and not to have essence;* or that *It is impossible for an entity at one and the same time to exist and not to exist,* these two Judgments are equivalent to the intuitive cognition, that *Nothing can at once possess and be without the same reality.* The Principle of contradiction, therefore, is the ultimate in order of reduction. Such is the teaching of the Angelic Doctor. 'In those objects,' he remarks, 'which are subject to human apprehension, there is discovered a certain order. For that which is first subject to our apprehension, is Being; the intuition of which is included in all the possible objects of apprehension. Wherefore, the first indemonstrable Principle is, that it is impossible at once to affirm and deny; which has its foundation in the concept of Being and of Not-Being. And on this Principle all the rest are based[1].' And, again: 'In these Principles' (i.e. in self-evident Principles which belong to the philosophy of natural reason[2]) 'there is discovered a certain order; so that some are implicitly contained in others. Just as all Principles are reduced to this one, as to the first: *It is impossible at once to affirm and deny*[3].'

[1] 'In his autem quae in apprehensione hominum cadunt, quidam ordo invenitur. Nam illud quod primo cadit sub apprehensione est ens, cujus intellectus includitur in omnibus quaecunque quis apprehendit. Et ideo primum principium indemonstrabile est, quod non est simul affirmare et negare; quod fundatur supra rationem entis et non entis. Et super hoc principio omnia alia fundantur, ut dicit Philosophus in iv. Metaph.' 1-2ae *xciv*, 2, *c*.

[2] 'Sicut principia per se nota in doctrina quae per rationem naturalem habetur.' 2-2ae *i*, 7, *c*.

[3] 'In quibus principiis ordo quidam invenitur, ut quaedam in aliis implicite contineantur. Sicut omnia principia reducuntur ad hoc sicut ad primum: *Impossibile est simul affirmare et negare.*' *Ibidem.*

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II. The ultimate metaphysical Principle in order of reduction must be the first and fundamental one in indirect as well as in direct, or ostensive, demonstration. For the metaphysical science, as it may be remembered, has this among other notes of its supremacy over the rest of the sciences, that it proves its own Principles, as well as the Principles of all the other sciences. But it obviously could not do this by ostensive demonstration; because Principles of science are immediate. Therefore, it must employ that indirect demonstration which has been called *Reduction to the impossible or absurd.* Accordingly, the ultimate Principle must underlie both forms of demonstration. In the previous Member it has been shown how the Principle of contradiction is first within the sphere of ostensive demonstration. The only question, then, remaining is, whether it is likewise first within the sphere of indirect demonstration. But this is not difficult of proof. For every such syllogism rests upon a certain Judgment that affirms the impossibility of a given absurdity. If so, indirect demonstration, in ultimate analysis, must needs repose upon that Judgment which exhibits the common and universal motive of all similar Judgments. But this is no other than the Principle of contradiction, which exhibits the impossibility of the most universal, most clear, and greatest, absurdity.

DIFFICULTIES.

I. The Principle of contradiction cannot be the ultimate in order of reduction, because it is a negative Judgment; and all negative Judgments are reducible to a prior affirmative. Wherefore, the Principle of contradiction is reducible to this affirmative, *Being is Being.* This argument receives confirmation from the difficulty of supposing that a negative Judgment could exhibit the motive common to affirmative Judgments. A further confirmation is to be found in the fact, that logicians have given the Principle of contradiction under an affirmative form; such as, *It is necessary that the same thing should be either affirmed or denied of the same;* and better still, *It is necessary that everything should be or should not be.*

ANSWER. Although it is quite true that, in the instance of *many* negative analytical Judgments, reduction to a prior affirmative Judgment is possible; yet it is not invariably or necessarily so. And notably in the case before us such reduction is impossible, for

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this reason; that Being and Not-Being are the two primary concepts in the genesis of scientific thought. There can, therefore, be no antecedent concept, in which a synthesis of the former two could be anyhow discovered. Yet, between themselves, by reason of the singular universality of each, there is contradictory opposition. It is impossible, in consequence, that the Principle, generated out of the necessary relation between these two primary terms, should be other than negative. Neither can it be sustained for one moment, that the Principle of contradiction is reducible to this affirmative,—*Being is Being.* For in the Principle to be reduced there are two terms, one of which is suppressed in the proposed reduction. Moreover, the said affirmation of the identity of Being with itself, by reason of its sterility, is unfitted for the function of a Dignity, or fundamental Principle. Besides, other so-called analytical Principles of a like nature could not, with any show of reason, be reduced to it as to an ultimate most clearly exhibiting the common motive on which the rest depend. For it is quite as evident that, v.g. *Cause is cause*, or, *Accident is accident*, or that, *Free-will is free-will*, as that *Being is Being.* Lastly, it does not exhibit the motive contained in the Principle of contradiction; for it does not at all follow, because *Being is Being*, that therefore *Being cannot be Not-Being.*

As for the first confirmation, it must be said that the Principle of contradiction, though negative, (one would rather be inclined to say, *because* negative), supplies the motive common to all affirmative analytical Judgments. For it establishes the necessity of Being generally, from the absolute impossibility that Being should be otherwise than Being. Nor can it be justly urged, that the Principle of contradiction is *formally* applicable only to indirect demonstration, not to ostensive. For, first of all, the fact of its exhibiting the formal motive of indirect demonstration is no small justification of its claim to the supremacy; since Principles, or immediate Judgments, (as has been noticed before more than once), admit of no other proof. Yet, to prove them somehow is a distinguishing attribute of the first and highest science. Then, secondly, though it should be granted that this Principle is not *formally* applicable to affirmative analytical Judgments, this does not preclude it from being (as it *de facto* is) the common fundamental motive of their *necessity.*

In reply to the second confirmation, it is denied that either the Judgment,—*It is necessary that the same thing should be either affirmed or denied of the same*,—or the other Judgment,—*It is necessary that*

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everything either should be or should not be,—exhibits the motive proper to the Principle of contradiction; and, consequently, the latter could not be legitimately reduced to either of the former. In order to be able to justify this assertion in the clearest manner, it will be necessary to borrow from logic certain fundamental notions, proper to the doctrine of opposition. In all opposition, or mutual repugnance of terms, there are two elements to be considered,—two distinct constitutives of repugnance. The first is to be found in the incompatibility of the terms, which is expressed by the law that *Two contradictories cannot both be true.* The second consists in the immediateness of the terms; whence it arises that one or the other must be. This is expressed by the law that *Two contradictories cannot both be false.* In contradictory, or perfect, opposition both these laws are verified; for if A is true, O is false, and if A is false, O is true. But in contrary, as in privative, opposition, the first law only is verified; not the second. For if A is true, E is false, and if E is true, A is false. But it does not follow, because A is false, that E must be true; since A and E may be false together. Now, the Principle of contradiction *formally* exhibits the motive of the first law; the two Judgments offered in exchange, that of the second. Therefore, the Principle of contradiction is naturally prior in order of cognition; and this, for three reasons. First of all, it is clearer and more easily known; forasmuch as the formal repugnance of terms is immediately evident, while their immediateness requires declaration of some sort. Then, again, repugnance of terms is common to all true opposition; because, so far forth as there are terms opposed, those terms are repugnant to each other; but immediateness is not. Lastly, the Judgment that *Two contradictory terms cannot both be true,* is conceptually prior to the other, that *Two contradictory terms cannot both be false;* just as truth is absolutely prior to falsity.

NOTE. In the above answer, no reference has been made to subcontrary and subaltern opposition; if, indeed, the latter deserves the name. The plain reason for the omission is, that the opposition of particular Judgments is of a notably inferior kind, and that the Judgments themselves, as being particular, have no place in science. Subaltern opposition, on the other hand, is purely logical.

II. It is objected, that the Principle of contradiction cannot be

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the ultimate in order of reduction. For, in any given series of co-ordinate demonstrations, the attributes, successively predicated of the subject, are ultimately reduced to the primary attribute, which is demonstrated of the same subject by the medium of its definition. Hence, the ultimate in order of reduction will be either the Judgment in which the primary passion is predicated of the definition; or that, in which the definition is predicated of the subject. Such being the case, the first Principle in metaphysics will be either, *Everything that has an essence, is one;* or, *Every being has an essence.*

ANSWER. This difficulty implies, on the part of the proposer, what may be called an *ignoratio elenchi. The Dignities,* as they are called, or fundamental Principles which underlie science, never enter actually into the demonstration; but are the ultimate basis on which rest, and by whose supreme virtue are established, those Principles which are intrinsic to the demonstration. Hence, the premisses and conclusion of the difficulty are willingly granted; yet, the Principle of contradiction will, nevertheless, retain its place as the ultimate in order of reduction.

III. It has been objected further against the truth of this Thesis, that the Principle of contradiction is reducible to the Judgment,—*Every being is one.* For it is *therefore* impossible that anything should be at once and should not be, because everything is determinately one. Consequently, this latter will be the ultimate in order of reduction.

ANSWER. Being, *as such,* is divided off from Not-Being; and the opposition between the two is founded *immediately* in the formal and absolute repugnance of the two terms. Rather, Being *as one* is divided off from every other being. This latter distinction, however, depends in genesis of thought on the previous division of Being from Not-Being. Wherefore, the proposed Principle depends on that of contradiction, rather than this latter on the former.

IV. Another objection has been urged to this effect. It does not seem either becoming or probable, that a modal Judgment, and one, moreover, which includes a condition of time, should be the ultimate in order of reduction. Yet it is plain that such is the Principle of contradiction.

ANSWER. There is no assignable reason why the ultimate or first Principle should not assume the form of a modal Judgment.

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For a modal Judgment differs from a pure categorical only in this, that it expresses the quality of the *nexus* between subject and predicate; whereas, in the latter, the same quality of *nexus* is there, but is not expressed or, indeed, explicitly objected before the mind. Thus, for instance, *Man is a rational animal*, and, *It is necessary that man should be a rational animal*,—are really and objectively one and the same Judgment; with this formal distinction, that, in the latter, the necessity of the *nexus* between *man* and his definition finds its place in the enunciation. But, in a fundamental Principle, this is an advantage rather than otherwise. As to the further objection, that the Principle of contradiction involves a condition of time,—it has been justly stated in answer, that the *at once*, contained in its enunciation, does not condition the subject or the absolute *nexus* between predicate and subject, but expresses at the utmost an ideal time, necessary to the determination of the contradictory terms which, together, constitute the predicate, more especially in the application of the Principle to synthetical Judgments. For it is not needed in the instance of analytical Judgments. In fact, it is hardly necessary to introduce either the modality or the condition of simultaneity. Accordingly, Suarez has reduced the Principle to a simpler expression, as follows:—*No entity is and is not.*

V. Sir William Hamilton has brought forward a series of objections to the Principle of contradiction, which shall form the concluding difficulty. It will be more fitting to give them in the author's own words. They are contained in the two following passages:

'The argument from Contradiction is omnipotent within its sphere, but that sphere is narrow. It has the following limitations:—

'1°, It is negative, not positive; it may refute, but it is incompetent to establish. It may show what is not, but never, of itself, what is. It is exclusively Logical or Formal, not Metaphysical or Real; it proceeds on a necessity of thought, but never issues in an Ontology or knowledge of existence.

'2°, It is dependent; to act it presupposes a counter-proposition to act from.

'3°, It is explicative, not ampliative; it analyses what is given, but does not originate information, or add anything, through itself, to our stock of knowledge.

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'4°, But, what is its principal defect, it is partial, not thoroughgoing. It leaves many of the most important problems of our knowledge out of its determination; and is, therefore, all too narrow in its application as a universal criterion or instrument of judgment. For were we left, in our reasonings, to a dependence on the principle of Contradiction, we should be unable competently to attempt any argument with regard to some of the most interesting and important questions. For there are many problems in the philosophy of mind where the solution necessarily lies between what are, to us, the one or the other of two counter and, therefore, incompatible alternatives, neither of which are we able to conceive as possible, but of which, by the very conditions of thought, we are compelled to acknowledge that the one or the other cannot but be; and it is as supplying this deficiency, that what has been called the argument from Common Sense becomes principally useful[1].'

The second passage adds to the items in the general indictment:—

'This law has frequently been enounced in the formula,—It is impossible that the same thing can at once be and not be; but this is exposed to sundry objections. It is vague and, therefore, useless. It does not indicate whether a real or notional existence is meant; and if it mean the former, then is it not a logical but a metaphysical axiom. But even as a metaphysical axiom it is imperfect, for to the expression *at once* (*simul*) must be added, *in the same place, in the same respect,*' &c.[2]

Answer. It must be observed, at the outset, that, in the first quotation, Sir William Hamilton passes alternately from 'the *law* of Contradiction' to 'the *argument* from Contradiction,' without in any way notifying the change or motive of the change. Accordingly, it is not a little difficult to determine, whether his objections apply exclusively to the *argument*, or are intended likewise to include the *Principle* of contradiction considered as the primary basis of scientific thought. Under No. 4 he expressly names the Principle, though he is professedly engaged in minimizing the efficacy of the argument. Under these circumstances, it will be safer, perhaps, to consider his animadversions in their possible bearings on the one and the other.

His first remark, then, is, that *the sphere of the argument from*

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[1] *Metaphysics, Appendix II, Laws of Thought, V. II, pp.* 524–25.

[2] *Logic, Lect. V,* ¶ *xv. V. I, p.* 82.

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contradiction is narrow. (*a*) If he is referring to indirect demonstration, or reduction to the absurd, one may admit that its sphere is practically narrow, yet of paramount dignity, seeing that it embraces all immediate analytical Principles and, as a consequence, the first Principles of all the sciences. (*b*) If he is referring to the Principle of contradiction, it is denied that the sphere is narrow. On the contrary, it is co-extensive with thought and with the entire object of thought. Nevertheless, the author attempts to prove that the sphere is narrow, 'because it has the following limitations.' These shall be briefly considered in their order.

1°, '*It is negative, not positive.*' This criticism, together with the rest under the same heading, applies equally to argument and Principle; the same defence will, therefore, do for both. The above objection has been already answered; so, let it pass. '*It may refute; but it is incompetent to establish;*'—rather, it most firmly establishes, by showing the absurdity of the contradictory. '*It may show what is not, but never of itself, what is;*'—rather, it shows what is, by evincing the absurdity of its not being what it is. '*It is exclusively Logical or Formal, not Metaphysical or Real.*' Here there is need of distinction. If the author means that the laws of opposition on the one hand, or the Principle of contradiction and the reduction to the absurd in their purely formal construction on the other, are 'Logical or Formal, not Metaphysical or Real,' the truth of his assertion will be readily granted. But, then, the Principle of contradiction and indirect demonstration are not exceptional in this respect; since the same may be predicated of every Principle and of every form of argument. Nor is it probable that this is the author's meaning. If, however, he means to say, that the Principle of contradiction, taken *adequately*, is not metaphysical or real, the assertion must be met by a categorical denial. For it has been pointed out in the declaration of the Thesis, that this Principle is immediately based upon the transcendental concept of Being in its antithetical relation to the conceptual *beyond* of Not-Being,—those two primordial concepts in the metaphysical science, whence are derived the attributes of Being with their cognates. '*It proceeds on a necessity of thought,*'—rather, on an objective necessity thought or conceived; '*but never issues in an Ontology,*'—denied, for the reason already alleged; '*or knowledge of existence,*'—which, in the obvious sense of the words at least, is not the professed issue of ontology or

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metaphysics; since this latter is the science of essence. . See the first Book.

2°, '*It is dependent; to act it presupposes a counter-proposition to act from.*' (*a*) If the author is referring to the *Principle* of contradiction, the assertion must receive a direct negation. (*b*) If he is speaking of indirect demonstration or reduction to the absurd, it must be owned that he is right. But then, it is noticeable, first of all, that dependency on propositions is common to all demonstration. Every syllogism, in fact, is 'dependent' on its two premisses; and cannot 'act' without them. Then, again, though indirect demonstration has a most important part to play in metaphysics, forasmuch as it enables us to prove first Principles; yet no one would contend that it is in itself the noblest species of demonstration.

3°, '*It is explicative, not ampliative; it analyzes what is given, but does not originate information, or add anything, through itself, to our stock of knowledge.*' There is some difficulty, perhaps, in realizing the nature of this pair of antitheses; if, indeed, they will bear examination. Surely, that which is capable of unfolding (*explicative*), is thereby capable of enlarging (*ampliative*); and every true *analysis*, whether of concepts or things, must *add to our stock of knowledge*. But, to proceed:—The author would seem to have had before his mind, in this place at all events, the *Principle* of contradiction; for an argument, or demonstration, can scarcely be represented as a process of analysis, though presupposing it. However, (*a*) If he is referring to the Principle, he is wrong; as the whole of the present disputation tends to show. For it is, in a way, the source from which our cognition of the Transcendental attributes is derived, and the primordial foundation on which all science rests. (*b*) If he is intending to signalize indirect demonstration, there is need of a distinction. Knowledge, or the cognition of truth, is capable of receiving addition in two ways, viz. *extensively*, and *intensively*. In the former case, the sphere of the proposed object is enlarged; in the latter, the object remains the same, but the concept of it grows in explicitness, breadth, depth, representative clearness, evidence,—i.e. thought and knowledge grow. Both are additions to the stock of knowledge, after a sort; but, of the two, the latter is evidently a more real and proper addition to knowledge than the former. And it happens, owing to the weak-

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ness of the human mind, that these two kinds of addition to our knowledge are ordinarily found to be in inverse ratio. Encyclopedists do not make philosophers. They know a very little of many things, and much of nothing. Mr. Stuart Mill makes a similar mistake to that of the author now under our consideration, when, contrasting deduction with induction, he makes small count of the former, on the score that it is not inventive. Yet, if the term, *inventive*, is to be understood of truth as conceived in the mind, deduction is more inventive than induction, by how much its conclusions are more absolute and certain. If it points to the object or ontological truth of the object, induction is no more inventive than deduction. Neither of them invents, but cognizes, truth. If, finally, it is intended that induction discovers more and higher truths than deduction, the assumption is gratuitous and false.

4°,—The last accusation which the author brings, in the first passage quoted, against 'the *Principle* of Contradiction,' is dependent on his peculiar theory of the Conditioned and of the *Antinomies*, (as it may, perhaps, be permitted, after the manner of Kant, to call them); which will find a more fitting place for examination elsewhere. For the present it suffices to say, that the said theory is baseless; and, consequently, the objection may be left to its own demerits.

In the second passage that has been cited, this author brings three additional charges against 'the Principle of Contradiction.' These are,

5°, '*The Principle is vague and, therefore, useless.*' It is pre-eminently undetermined, because it is Transcendental,—yes. It is vague, in the sense that it is obscure and of undetermined *meaning*, —no; for the sense is obvious to the simplest intellect. That it is 'useless,' because most universal and unconditioned, is strenuously denied.

6°, '*It does not indicate whether a real or notional existence is meant; and if it mean the former, then it is not a logical but a metaphysical axiom.*' It *is* a metaphysical, not a purely logical Principle. But it certainly does not lay claim to this, because it represents either real or notional existence *in actu signato*, i.e. as the formal term of its judicial act. Far from it; for were it to do so, it could not be a metaphysical Principle at all. If it formally

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included existence in its termination, it would, by reason of its Transcendental nature, include within its term *all* existence, finite as well as infinite. But finite existence is contingent; and, consequently, the Judgment could not be analytical or necessary, i. e. it would be incapable of becoming a Principle. The metaphysical science has to do with essence; and the Principle of contradiction is formally terminated to essence. It is true that everything real, in that it is real, involves a transcendental relation to existence,—a relation either aptitudinal or actual; but it is the reality, not the existence, which formally enters into the predicate of the Principle of contradiction.

7°, The third in this second series of objections refers to the insertion, in the enunciation, of the condition, *At once.* This has been already answered.

NOTE. The same Author quarrels with the old name,—*Principle of contradiction;* and wishes to substitute in its place, *Principle of Non-contradiction.* The reason for this proposed alteration hardly bears examination; and anyhow, a mere dispute about the use of words or the propriety of long-established terminology will not find room for itself in these pages. Such discussions have no affinity with the philosophy of the School.

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CHAPTER IV.

EXPERIMENTAL PRINCIPLES.

In the second Chapter of the present Book it has been pointed out, that Judgments are either analytical or synthetical. It was there further stated, that analytical Judgments are those wherein the predicate is of the essence of the subject and is discovered to be such by simple analysis of the latter; whereas in synthetical Judgments the predicate is not of the essence of the subject, but is found in extra-essential conjunction with it and, as such, is represented in its accidental synthesis with the subject by the judicial act. Again; it was proved in the hundred-and-eighteenth Proposition, that *Particular synthetical Judgments, which are the foundation of legitimate induction, are capable of assuming a sort of moral universality, not on the strength of the induction, but by virtue of some analytical Principle.* These particular synthetical Judgments, by reason of this their elevation, become synthetical Principles, or axioms, within the domain of physics. It now behoves us to determine, what that analytical Principle is, by virtue of which the aforesaid synthetical Judgments are enabled to assume a universality amply sufficient for the purposes of physical investigation. But, previously to entering upon this inquiry, there are certain observations which, for the better understanding of the question, it will be of advantage to premise.

I. First of all, it is taken for granted, as being a scarcely deniable fact, that there *are* synthetical Judgments, which are universally accounted for Principles by all those who have a scientific acquaintance with their nature. Certain examples shall be given of the kind of Judgments here alluded to. Take, for instance, the law of universal gravitation,—that *every particle of matter in the universe attracts every other particle with a force directly proportioned to the mass of the attracting particle, and inversely to the square of the distance between them.* The two principal laws touching the fall of bodies will

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afford another instance. They are symbolized by the mathematical formulas, $v=gt$, and $s=\frac{1}{2}gt^2$; the former indicating that *the velocity acquired is proportional to the time;* the latter, that *the space described is proportional to the square of the time employed.* Again, there are the three great Keplerian laws touching the solar system; —1°, *That the planets revolve round the sun in ellipses, having the sun for a common focus:* 2°, *That every planet moves in such a way, that the line drawn from it to the sun sweeps over equal areas in equal times:* 3°, *That the squares of the times occupied by the several planets in their revolutions in their elliptic orbits, are proportional to the cubes of their mean distance from their common focus, the sun.* Once more: It is a law of reproduction, that *like begets like;* e.g. turnip-seed produces turnips, man begets man, dog begets dog. Now, no one of these Judgments is analytical. There is nothing in the *essence* of bodies, (certainly as usually understood in the philosophy of the School), which necessitates, under whatsoever possible hypothesis, their being acted upon by the said law of gravitation. Men generally, one may fairly presume, would be free to admit that, absolutely speaking, bodies with their present essential constitution might have been made subject to a totally different law; always supposing a Power capable of imposing laws on nature. But if the law of gravitation is not an analytical Principle, so neither the Keplerian laws and those touching the fall of bodies; since the latter rest for their demonstration on the former. It is quite conceivable at all events, if not probable, that in 'the new heavens and new earth,' (of which mention is made in the Christian Revelation), the laws that now govern the material universe may be either modified, or even supplanted, by others. Certainly, there is nothing like a metaphysical contradiction in the idea, such as confronts us when we attempt to conceive a man as being an irrational animal or a diamond as being a pure spirit. Neither can it be maintained, so far as one can see, that the ancestral principle in reproduction is an essential consequent of animal or vegetable life. But, if our appreciation of these laws is just, it will follow that all of them must be synthetical Judgments, based on contingent facts. Yet, on the other hand, most of them are generally recognized by the scientific in physics as practically Principles,—as Judgments which are, somehow or other, invested with a universality of their own. No experimentalist doubts that natural phenomena, wheresoever and how often soever it may please him to observe them, will correspond with, and help to verify, these

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laws. His own induction of facts will have been necessarily small. It may even be, that he has not troubled himself to make personally any assay at all, but has trusted to the observations or experiments of others. Yet, he does not doubt. The *laws* are to him practically universal; and, if he comes across an apparent anomaly, not even then does he dream of questioning these physical Principles. He is more inclined to suspect the presence of a disturbing cause. Hence it would appear that the opinion of Wolfe and his followers is quite untenable; inasmuch as it is at open war with general experience and individual consciousness. For the writer in question maintained that certainty does not extend beyond the *quasi* middle term of the induction, i.e. beyond the facts of experience; and that, as to the rest,—the future and possible,—the conclusion is only probable, not certain. His formula of induction would be,

$a+b+c+d+$ &c. are A (the attribute or law).

But $a+b+c+d+$ &c. are *probably* representative of W (the whole class.)

$\therefore$ W is *probably* A.

Yet,—to take an instance in the concrete,—if any one should throw a stone up into the air, is he not as certain as he well can be, that in due time the stone will fall again to the ground? Are not astronomers as certain of a future eclipse or transit as they are of a past one? Does any one in his senses fear, when the kettle is put upon a clear fire, lest the water should not boil? These and the like future phenomena are to no man, experienced in them, *mere* probabilities; they are practically certain. So then, the *fact* of the universal existence of such certainty is undoubted. The question, therefore, is: How can we account for it? Is it the result of a mere prejudice or of habitual associations; or can it be logically, or rather conceptually, justified?

II. The subjective certainty touching any such law and the certainty attaching to the simple process by which the law has been discovered in the midst of those natural phenomena wherein it lay latent, are two very different things. The discovery has been made by means of an imperfect induction of facts, collected by observation and experiment. (It may be remarked parenthetically, that there is this principal difference between the two processes just mentioned, that in *observation* we confine ourselves to reading from the book of nature. We simply look on, while the physical phenomena pass before us; and register the facts. But by experiment we force

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nature to the proof by our own proper action upon her. Thus, the astronomer *observes* the motions of the celestial bodies, and simply records facts over which he has no possible control. The chemist *experiments* upon water, by analyzing it himself into its component elements. He undoes, so to say, a physical combination, that he may verify the alleged nature of the composition to himself or others. After a like manner, in Atwood's machine the force of gravitation is in such wise regulated and modified by mechanical appliances, as to enable the experimentalist with greater facility to test the truth of the law, in obedience to which it is supposed to energize.) To resume: The facts that have been collected by observation and experiment, could never, *of themselves*, however numerous, justify certainty as to the constancy with which future phenomena would follow the same law, even under precisely similar circumstances and conditions. If the external world were nothing but a fortuitous concourse of atoms, as Democritus would have us believe; there would be no more certainty in the order of physical facts than there is in the throwing of dice. Yet, the fact remains to confront us. Men *are* sure that the order of nature will continue in the future identically such as it is in the present. But *why* are they certain? Such is the question that awaits its solution.

III. In the discussion of this vital subject, the existence of a God, —Maker of all things visible and invisible,—will be assumed as a postulate; though it will be afterwards demonstrated in the proper place. Thus much, however, may be said by way of anticipation. Physical science itself affords abundant proof of this fundamental truth of *rational* philosophy, (i.e. of philosophy acquired by process of pure reason, apart from the teaching of a Supernatural Revelation). It is impossible to conceive of order without an orderer,—of law, (even in its widest or in its analogical meaning), without an imposer of that law. Order and law are only cognized by an intelligent being and, therefore, must be the appointment of such an one. For the present it matters little whether the postulated orderer and lawgiver be conceived as *extrinsic* or *intrinsic* to the subject of order and law,—in other words, whether the concept be monotheistic or pantheistic. The philosophical absurdity of the latter will be proved later on. *Now* it suffices, that we suppose the existence of some God who forms and rules the seemingly external world. Lastly, it is worth noticing, that even if, with the idealist, we suppose the visible creation to have no real existence, but to be

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nothing save a series of subjective impressions made upon the human soul, the solution of the present question, offered in the proximate Thesis, will remain unshaken; as will be shown in the answers to the difficulties.

PROPOSITION CXXV.

The Judgment which may be thus expressed:—Those material entities which act according to the same physical law or under the same natural impulsion will ordinarily, (i.e. almost always), under similar circumstances and conditions, produce similar effects,—is an analytical Principle.

Prolegomenon I.

At the outset it will be necessary to explain what is meant by action *according to a physical law* and action *under a natural impulsion;* and what is the precise difference between the two orders of energy. An entity, then, is said to act according to a physical law, when its action, though orderly, does not flow from its own essential nature, but is (as it were) imposed upon it from without. Thus,—to illustrate what is here meant by an example or two,—according to the Peripatetic Philosophy, *the law of gravity* is in no wise a consequence of the essence of material substances, but has been imposed upon them from without. The same may be safely predicated concerning *the revolution of our earth and the other planets round the sun*, since this depends on the above-named law. So, *the decay of the leaves in autumn and the stripped trees of winter* are due to a physical law that is external to the essence of vegetable life. It may be objected, indeed, to this last instance, that the decay and death of the verdure is a *passion*, rather than an *action*, of the tree; and in great measure this is true. But, if the matter is attentively considered, it will appear that there is neither passion (or passive receiving) only nor defect only; but that there is action likewise, at least indirectly conspiring with the external cause. However the case may be, the example is retained; because it affords an easy illustration.

On the other hand, an entity is said to act *by a natural impulsion*, when, though its action is necessitated, (as is the case with an entity acting according to a physical law), yet it flows from its own essential nature. The word, *impulsion*, expresses the former, as excluding all freedom of choice; the word, *natural*, denotes the latter.

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To give a few examples :—*The heating action of fire, the locomotion of animals, the bark of a dog, the growth of plants*, are all instances of action under a natural impulse. It must not, however, be supposed, that necessity of action is limited to such material entities as act under a natural impulsion ; since the same holds good of those that act in obedience to a physical law. The difference between the two consists in this ;—that action under the direction of physical law has been ordered from without and is adventitious to the nature of the agent ; while action by a natural impulsion proceeds from the specific constituents, and is intrinsic to the nature, of the agent.

There is a caution which may be fittingly given, in connection with the present *Prolegomenon*. In offering some of the above illustrations to the notice of the reader, it must not be imagined that there has been any covert intention of dogmatizing upon the respective merits of this or that physical theory. It is more than probable that some physicists,—those in particular who cling to the dynamic theory,—may be prepared to maintain, that the action of gravity should be ranked among those which are the result of natural impulsion. So be it ; as far as the matter in hand is concerned. If the instance, in the case of certain individuals, does not serve the purpose (for which exclusively it has been introduced) of illustrating the subject-matter, by all means dismiss it. However, it is worth bearing in mind, that it is not only the attractive force of bodies, absolutely and in itself, which is contemplated in the given instance ; but the particular law by which *one particle of matter attracts another with a force directly proportioned to the mass of the attracting particle, and inversely to the square of the distance between them ;* in other words, to *the special determination* of the attractive force.

Prolegomenon II.

In the enunciation of the Thesis it is given as a requisite, necessary to the verification of the Principle there advocated, that the energizing entity should act *under similar circumstances and conditions*. What is the precise meaning of this modifying clause ? Is it essential to the truth of the Principle ? By way of answer to these questions, let it be observed that material forces, (to say nothing of any others), presuppose and prerequire, in order to the efficacy or completeness of their action, certain dispositions in the subject of their causality, and certain conditions or circumstances in their

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relation to the same. Without these, the energy of the force may in itself be unimpaired, yet will fail to produce its normal effect. Thus, for instance, *there will be great difficulty in lighting the fire, if the wood is damp;* although the natural force of the fire is undiminished. Here, there is a defect of disposition in the subject. *A cobra-di capello darts upon its prey; but its bite is harmless, because its fang has been extracted.* Here there is an organic defect on the part of the agent. *A rabbit will soon die, if it is kept under an exhausted receiver;* though it was in thorough health and its vital energy unimpaired, previous to its exclusion from the air. Here we have the condition of a necessary medium. Again: *if a needle is separated by too great a distance from the magnet, it will be insensible to the magnetic attraction. Place it nearer; the magnet at once draws the needle to itself.* Here we are in presence of a necessary condition, —the condition of due dynamic presence. *Two thermometers are simultaneously consulted; and they vary considerably in their respective readings. But one has been hung out in the sun; the other, set up in the shadiest corner of the observatory.* Here is an instance of the condition of place. So, *two barometers have been consulted on one and the same day wherein, moreover, the atmospheric pressure has been normal; but there is a discrepancy in the indications. The effect is due to the fact, that one was read at* 4 A.M., *the other at* 10 A.M.; *and the former hour is one of the two* minima, *the latter one of the two* maxima, *of the diurnal variation.* This is an instance of the condition of time. Once more: *An experimentalist is watching the magnetic needle; and on a sudden it exhibits signs of violent perturbation. The phenomenon is due to the fact, that a visitor has just entered the observatory with a bunch of keys in his pocket.* Here we have an example of the condition of due isolation. In these and many like cases, there has been some difference in the surrounding circumstances, or in the condition of the force or of the subject, which has caused either a nullification of the effect, or a sensible modification of it, or even a specific change in it. And such anomalies are not attributable to the acting force, but to the said change of circumstances or conditions.

The Proof of the Proposition.

If the Judgment, which is announced in the enunciation of the Thesis is an analytical Principle, it follows that the Predicate must necessarily be discovered, by analysis, in the essential idea of the

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Subject. It is only natural, therefore, to commence by way of analysis; afterwards, the conclusions shall be synoptically presented in logical form.

i. Let us, first of all, analyze the idea of an entity acting according to the same physical law. Such an agent must act *of necessity*, by virtue of the hypothesis. It must be determined to one act; for the simple reason that it is supposed *hic et nunc* to be subjected to a law. Neither can it abstain from energizing, *positis ponendis;* because the present question exclusively affects the action of bodies from which all liberty of choice is essentially excluded. Here is the place to notice an objection which has been made to this the first position in our analysis. The conclusion has been extracted from the idea of *law*. But certain modern writers have demurred, as has been already hinted, to the strict accuracy of the term in connection with the present subject-matter. Nor, indeed, can it be denied that the use of the word, in such relation, is analogical. Nevertheless, it has a definite meaning and represents a fact of experience; otherwise, the term, so applied, would never have found its way into all the languages, ancient as well as modern, of the civilized world. It behoves us, then, to endeavour diligently to find out precisely what it stands for. When we speak of a physical law, we mean, (if we mean anything at all), that certain similar effects have been continuously produced by similar agents under similar circumstances and conditions; although such effects, so far as we can judge, are in no wise due to any connatural or essential force innate in the agent. But what does this mean, if not a *constant order* of action and effect, which is not connatural with the agent, but is imposed upon it by something outside of its own essential nature? *The leaves invariably fall from the deciduous trees in autumn and winter.* It will hardly be maintained by any man of common sense, that this falling of the leaves is a result flowing from the essential nature of a tree; otherwise, what is to be said of evergreens? Some one may urge, it is owing to the variations of the seasons. True; but hardly to the point. For, at all events, such an explanation involves the admission, that this invariable effect, or effective defect, is not connatural with the tree but imposed upon it by a foreign causality. Yet this is precisely the conclusion at which we have arrived in this the first landing-place of the analysis. Then, again, the same question recurs respecting the cause of the variation of the seasons and, consequently, touching the cause of the earth's annual motion round the sun.

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Furthermore: This interaction of secondary causes only puts in evidence with greater clearness the existence of a constant, universal order in material substances; which order is not essentially intrinsic in these substances but adventitious and imposed upon them from without. If there be, then, an extrinsically appointed order in sundry of the actions of physical agents, that order must be practically constant in the future as in the past; in other words, from similar agents acting under similar conditions and similar circumstances and in obedience to the same physical law, similar effects will be ordinarily produced. But why? Because it is a truth of intuition, that order is necessarily the production of an intelligent being only; and, seeing that the order embraces all possible bodily agents, it must result from an intelligence supreme over the whole realm of matter and *so far* supremely intelligent and wise. But all wise order,—order constituted in wisdom,—is constant. Therefore, it will be proof for the future; as it has given proof in the past. But, why is it an intuitive truth, that order must be the production of an intelligent being? Because order is *intentional* unity, *intentionally* evolved out of multiplicity; and of this intellect alone is capable. And why again, it may be demanded, must an order established in wisdom be constant? For the reason that, since order is intentional (i.e. purposed, planned, intellectually conceived) unity, evolved with a definite intent out of multiplicity; wisdom requires that such intent should not be frustrated, save for reasons which would more than countervail the temporary disorder. But this could rarely happen; first, because in a wisely balanced universe the occasions would not frequently occur, and then, more particularly, because a repeated violation of the order would annul the unity, and frustrate the purposes of its original establishment. Therefore, there is no sufficient reason for anything like chronic disturbance,—not on the part of the energizing body, because it is determined to one effect and has no initial capacity for suspending, or changing the nature of, its effect; not on the part of the imponent of the said order, because order prudently instituted is constant. But why, once more, does this order embrace all *possible* bodily agents? Because the Judgment, as enunciated in the Thesis, abstracts from the *actual existence*, whether of agent, subject, condition, or circumstance; otherwise, it could not be a metaphysical, i.e. an analytical, Principle. It affirms that, under every conceivable hypothesis, if entities are conceived as acting according to any conceivable,

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(provided that it be identical), physical law, they will, under like conditions and circumstances, produce ordinarily the like effects.

But the immediate evidence for the truth of the present Proposition becomes yet clearer and more cogent, if we introduce the postulate, to which claim has been made under the third Section of the prefatory remarks that stand at the head of this Chapter. Let God, according to the only just concept of Him, be the Maker of the visible universe,—a truth, remember, which already has been virtually evolved from the foregone analysis. It is He, then, and He alone, Who has imposed this order upon material entities. His is the *law;* He, the supreme Legislator. Wherefore, seeing that He is infinite Wisdom, the order which He has established must be wise. But,—to repeat the axiom already insisted upon,—all wisely constituted order is constant; not merely for the reason already given but also for another, springing from the first, which is more intimately connected with the intelligent creature. For it is plain, from the very constitution of man as including his necessary relation to the world of sense, that any habitual violation of the established order would induce a universal and most disastrous intellectual disorder which would be quite inconsistent with the infinite Wisdom of the Creator. But why? Because man primordially receives his ideas through the medium of his senses and, consequently, constructs his alphabet of truth out of his perceptions of sensible phenomena. But, if sensible objects should have an habitual tendency to lead him into error within a given sphere however limited; not only would he become unsure and puzzled there, but he would learn to doubt of all, not without reason. Thus, the great, hitherto open, book of the natural revelation would be closed to him for ever; for it would be fastened with clasps of a universal scepticism. Such a mishap would uproot from his understanding that first Principle of continuity, all but innate, which at the outset of his intellectual career he has intued in all things throughout endless variety; and which after-experience, research, and contemplation, have only fixed the more indelibly in his mind. In this connection, it is pleasing to be able to quote from an interesting work, written jointly by two illustrious professors; wherein the present argument is urged with a certain felicity of phrase. These are the words: 'It thus appears that, assuming the existence of a Supreme Governor of the universe, the principle of Continuity may be said to be the definite expression of our trust,' (say rather, of our certain and well-founded conviction), 'that He

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will not put us to permanent intellectual confusion.[1]' For such a method of procedure would befit neither His Wisdom nor His Goodness;—not His Wisdom, for it would destroy the order appointed by Himself; not His Goodness, because it would needlessly entangle the highest and noblest of His visible creation in a hopeless perplexity of thought.

The previous analysis, however, lays bare another truth, connected with the present investigation, which is of the highest moment in the face of the prevailing materialism. It stands to reason, that He Who of His own Free-Will imposes a *law* or order has the power to suspend it, or, if He pleases, to arrest the effect. Though the material agent is determined to one effect, and is not free to withhold its act in presence of the normal conditions; yet He remains absolutely free and absolute Master over His own appointments. Consequently, an occasion may sometimes arise, when His Wisdom and His Goodness conspire to render a particular exception to the general law desirable. Thus, for instance, if there be a supernatural as well as a natural order in the Divine Governance; it might be anticipated that the latter, as being the inferior, would occasionally have to give way to the former. Hence it might easily be, that a physical law should be suspended in this or that individual case, in order thereby to attain more effectually the higher end of a higher and nobler order of Providence. As the Scotch professors already quoted justly remark, 'Continuity, in fine, does not preclude the occurrence of strange, abrupt, unforeseen events in the history of the universe, but only of such events as must finally and for ever put to confusion the intelligent beings who regard them.[2]' Nay, more: It is not impossible, or even antecedently improbable, that the directive action of a physical law, within the specific limits of a certain series of results, should be *permanently* supplanted by a higher supernatural law; provided that this latter has been sufficiently promulgated, so as to afford a reasonable safeguard, (for those who choose to avail themselves of it), against the intellectual confusion that would be otherwise engendered. This last supposition requires, it may be, further elucidation. Let us, then, make a hypothesis. Suppose that the Supreme Author of the physical order should have willed, in order to promote some supernatural end in favour of His intelligent creature, to suspend the action of some corporal agent,—

[1] *The Unseen Universe, by B. Stewart and P. G. Tait; ch. II, n.* 77.
[2] *Ibidem, n.* 76.

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nay, to reduce to nought the agent itself, within the sphere of certain determined circumstances and conditions, and to continue unaltered the same effects by the agency of higher causes, substituting for the sensible and material the invisible and spiritual,—and that, by virtue of a new law; in such case even, the human intellect would not be put to confusion, if only the supernatural exception were made known to man by a well-authenticated Divine Communication. Let us imagine the following announcement to have been duly made: 'In presence of such phenomena under such and such easily recognised circumstances and conditions, be not surprised or troubled in thought, if the ordinary link should be broken between these phenomena and their normal cause. For, in these cases, I intend unintermittingly to introduce a new causality,—the action of the Supernatural. Trust not, therefore, in this series of instances, to any conclusions deducible from the evidence of the senses; because, for purposes present to My Wisdom, the ordinary law will be supplanted by a higher which is discoverable by no merely natural deduction of human reason.' The case supposed, if that Divine Communication has been duly made to man, intellectual confusion cannot arise save by virtue of a determination, on the part of this or that individual, not to accept the Revelation. But, in these cases, the intellectual confusion is voluntary and in no wise attributable to the Author of the supernatural and the natural order. Further: Those who accepted the message would be as certain of the continuity of the physical law, in all other instances not included within the one particular exception, as they had been before. Probably, that certainty would be intensified. For the exception would exhibit more clearly the Wisdom and Goodness of the Ruler, and would thus strengthen confidence in the *natural* continuity of the rule.

ii. A similar analysis of the action of entities energizing by virtue of a natural impulsion leads to the same results. For, though the nature or essence of an entity, *as such*, is immutable and not subject to the free-will of its Maker; yet, its existence is so subject, and *à fortiori* its natural acts. While, then, its Maker cannot change the essential nature of an entity or the natural *tendency* to its native action, (because this would be to change Himself); yet, in a particular case or series of cases, (for reasons similar to those that have been already suggested), He can arrest such tendency in its action and prevent it from producing its ordinary effect, or supply that effect by the medium of a higher causality.

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On the other hand, apart from these rare instances of immediate Divine Intervention, the law of natural action must be universal. For the corporal agent is necessitated to its acts, and is determined by an impulsion of its nature to the production of definite effects, *positis ponendis*. Therefore, the future physical facts, in the ordinary course of things, will be specifically identical with the past; supposing, of course, that the circumstances and conditions are similar. Indeed, in the instance of entities acting in obedience to a natural impulsion, the certainty would (if anything) be greater than in the former case of those that act according to physical law; because the action of the former flows from their essential nature and is, therefore, connatural with their being.

It now only remains to summarize the results of the above analysis in logical form. The Thesis, then, is declared by two analytical premisses.

From causes acting uniformly and of necessity, similar effects, under similar circumstances and conditions, are ordinarily produced.

But causes, acting according to the same physical law or in obedience to a natural impulsion, act uniformly and of necessity.

∴ &c.

The *Major* does not admit of doubt. It is evidently analytical. That the *Minor* is analytical, is thus proved. In the idea of an agent acting according to the same physical law or by natural impulsion, is contained the idea of an agent acting for the most part uniformly and necessarily. This *Antecedent*, in the case of an agent acting according to the same physical law, is founded on the Principle that *a wisely established order is constant;* since, in the idea of an agent acting according to the same physical law, is essentially contained the idea of an entity acting in accordance with an order wisely established. In the instance of an agent acting in obedience to a natural impulsion, the *Antecedent* rests on the two following Principles; viz., (1) That a necessary cause, when all the requisite conditions of action are duly present, necessarily produces its natural effect, unless it should be hindered from eliciting its act by some superior cause; and (2) That an order of nature, appointed in wisdom, is constant; whence it follows, that a superior cause will not, as a rule, interfere with the orderly action of the agent submitted to his control.

Note.—The doctrine, evolved in the preceding pages, is further elucidated by the Scholastic teaching with regard to evidence and

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certitude. Although, therefore, the philosophical consideration and treatment of these primary elements in conceptual truth professedly belong to ideology rather than to metaphysics, it may not be unprofitable to borrow from the former, by way of a *Lemma*, such Principles touching the two, as serve to illustrate the subject at present under discussion. True certitude, (considered in accordance with its primary signification, *subjectively*, i.e. as it exists within the mind), is the offspring of true objective evidence, i.e. of the clear intelligibility of the object. Hence, the certainty of the mind's adhesion to a truth depends upon the nature and degree of evidence attaching to the object as *hic et nunc* formally presented to the mind; and as many as are the kinds of evidence, so many will be the kinds of subjective certitude. Now, there are three kinds of evidence; to wit, metaphysical, physical, and moral. Of these, the first is unconditioned; the other two, conditioned. The first is immutable, necessary, absolute; the second, conditioned by the Will of God; the third, conditioned likewise by the will of man. This last, which depends upon human testimony, may be omitted in this place; seeing that it has no connection with the subject before us. With reference to metaphysical and physical evidence, the author will be excused if he introduces some quotations from a lecture which he delivered some few years ago, on this matter. The style is perhaps somewhat more popular than befits these pages; but this will not be censured, if it should help towards a clearer understanding of the subject. 'Metaphysical evidence, then, is the intelligibility of *essences*,—that light of truth which shines forth from the essential constitution of things.[1]' 'The great Creator from everlasting comprehended His own infinite Being in the inscrutable depths of His wisdom; and, thus comprehending, He also conceived that sea of essence as imitable in infinitely various degrees of excellence outside Himself. These were the prototypal ideas in the mind of God, of which Plato faintly and obscurely dreamed. These were, so far as the Divine Will should choose to use them, the primal patterns of creation. And accordingly as the creature has been ranged under the cover, so to say, of these prototypal ideas, his nature or essence is determined, and he takes his allotted place in a definite order of created being. Hence it follows that nature or essence is unchangeable, eternal, necessary; not this or that nature *in a particular being*, which connotes existence

[1] *Evidence and Certainty in their relation to Conceptual Truth, p.* 32.

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and, therefore, introduces the individual notes of A or B, but *the* nature or essence in itself. This is immutable, because it is objectively identical with the Divine Idea; and the Divine Idea is identical *ex parte rei* with the Divine Being. It is for the same reason eternal and necessary, as God Himself is eternal and necessary. Consequently, it is no derogation from the Divine Omnipotence to say, that God Himself cannot change the essences of things; for to change them would be to change Himself. Thus,—to put it in the concrete,—presupposing the Divine predetermination to create in any given time a certain William Smith, and presupposing, therefore, the same predetermination to make a man of him, God could not make him other than a rational animal. Besides these essences or natures, there are laws of the intellectual and moral order, which enter into the essential constitution (so to speak) of the universal whole, which are in like manner wholly incapable of change. They are immutable, necessary, eternal truths, because they are the mere partial reflex of the infinite Truth or of the infinite Justice and Holiness.' 'Such, evidence, then, is absolute. Its immutability, its necessity, its eternity, are unconditioned. It *could have been* affected, it *can be* affected, by no act of the free will whether of God or man. This is *metaphysical evidence*, the sole foundation of all science properly so called, because the sole foundation of all pure demonstration. It passes above all temporal phenomena, above all created existence *as such*, and shines with its pure, unfaltering light from the ages to the ages in that highest region of being and absolute truth. It is not pervious to *mere* common sense, because it does not live in the market-place or exchange; but, for all that, it is the life of the contemplative.

'I proceed, next in order, to consider what is meant by Physical evidence. And how can I describe it better than by saying that it is the *intrinsic* evidence of facts? I say, advisedly, *intrinsic* evidence, to distinguish it from that moral evidence, of which I have presently to speak. Its primary characteristic is, that it belongs exclusively to existences,—to things as existing either actually in themselves or in their necessary causes. In a word, it is the evidence of things already existing or of things that will exist by virtue of necessary causes which will produce them in a given point of time. Now, as all created existence is contingent,—as in its very nature it implies the idea of change, commencement, dependence; it is plain that its truth is not wholly unconditioned. In metaphysical judgments the

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predicate is found by analysis to be contained in the subject. Everyone, for instance, can at once perceive that in the judgment, *Two and two make four*, the predicate, *Four*, is contained in the subject, 2+2. But, when I say that *Mr. William Smith exists*, I shall have to search a long time if I am to discover in the *essence*, or *essential idea, of Mr. William Smith* the predicate of *existence*. He exists as a fact; but it was not necessary that he should exist, till he actually existed. The *fact* is here the cause of the *necessity*, but the *necessity* is not cause of the *fact*. It is true that he *must be* because he *is*,' (a necessity based on the Principle of Contradiction); 'but it is not true conversely that he *is*, because he *must be*.' 'I think I shall be able to set this distinction more clearly before you, gentlemen, if I may be allowed to introduce you to what I may call Physical prophecies;—facts of nature, which are not, strictly speaking, facts as yet, but will be facts in their due order and time. Thus, *The sun will rise to-morrow morning about seven,—On the twenty-fifth of next month there will be an annular eclipse of the sun, invisible at Greenwich*, as the almanacks tell us,—or, again, *The trees will be out in leaf before June*, and the like. Now, of some, if not of all, these truths we are certain, because they are evident. But, why are they evident? Because they are the logically necessary sequence of a constant law of nature. So far, so good. But I next proceed to ask, have we any evidence that such a law is immutable? Does the idea of its temporary suspension, or absolute derogation, distress, confuse us in the same manner as when we try to conceive that *Two and two might not make four?* Is the idea of motion essentially contained in the idea of the earth, so that we could not imagine it as stationary under any conceivable circumstances? The consciousness of each one will answer in the negative. But why? Because it is to us evident, that as the Free-will of the great Creator imposed the law, so He could, at any time, if He so pleased, suspend or abrogate it. So that our undoubting assent to these prophecies is based on our conviction as to the constancy of physical laws. And our conviction as to the constancy of physical laws rests on the infinite wisdom and unchangeableness of the great Lawgiver. Hence, the judgment of the mind is always, at least virtually, conditioned, in so far as it is a true concept. *The solar eclipse will take place on the twenty-fifth of this month, if there be no change in the laws of nature.* To conclude: —Physical evidence and physical certainty are inferior to metaphysical evidence and metaphysical certainty, because these latter are

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absolute, necessary, unconditioned; whereas the former are contingent and conditioned. There is this specific difference between them, that metaphysical truth, evidence, certainty, are independent even of the Will of God; whereas physical truth, evidence, certainty, are essentially conditioned by the Will of the first Cause.[1]'

It is this condition in physical evidence,—this dependence on the Divine Will for the continuity of physical law or physical order,—that necessitates the inclusion, in the Judgment which forms the subject of the present Thesis, of the word, *ordinarily*, i.e. *almost always, practically always*, as already explained. To put it in the concrete: The human mind intuitively judges that any given physical law will continue in the future as it has continued in the past, unless the Maker should will, in some particular instance, to introduce an exception. Though, therefore, physical evidence produces certainty in the mind, i.e. an absence of practical doubt; nevertheless, physical is inferior to metaphysical certitude, because, (as has been already remarked), the latter is absolute; while the former is essentially conditioned.

DIFFICULTIES.

I. Against the truth of the present Proposition it may be urged, that the declaration is entirely based on the hypothesis of the real objective existence of the material world. But, if the contrary hypothesis should prove true, and it should turn out that the so-called things of sense are merely subjective impressions of the human spirit, self-caused; then, the argument would break down. The above assertion is thus explained. The demonstration in proof of the Thesis proceeds from a minor Premiss which supposes, in the case of physical law, an external imponent of the law, on whose will it depends for its constancy. In the instance of natural impulsion, it supposes a Creator Who is able to hinder such natural impulsion from evolving into act. But such a supposition evidently depends upon a previous Judgment touching the objective reality of sensile things themselves. Once, therefore, invalidate the truth of the Premiss; the demonstration falls by its own weight. Further: If the phenomena of sense are purely a creation of the mind, their evidence and certitude will absolutely depend upon human thought; in other words, physical evidence and certitude, (and, consequently,

[1] *Evidence and Certainty in their relation to Conceptual Truth, pp.* 35-38.

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the value of experimental Judgments), will resolve themselves into the mind's consciousness and cognition of its own ideas. Once more: If the universe, spiritual and corporal, is nothing but an evolution of the absolute,—if the whole is really and objectively identical with the one, the evolution will be as immutable, as eternal, as necessary, as the evolved; and so-called physical law will claim to itself an evidence and certitude that are, strictly speaking, metaphysical. It follows, further, that the proposed Principle is not an analytical Judgment; because the predicate is not necessarily contained in the idea of the subject. For agency according to a physical law or in obedience to a natural impulsion is not essentially included in the idea of sensile phenomena. If it were, idealism would be in open contradiction with an intuition of the understanding; and this must not be assumed too lightly.

ANSWER. First of all, with respect to all these objections, it is to be observed in general; (*a*) That the metaphysical science presupposes many truths, already demonstrated or declared in ideology and natural philosophy. Now, in the former the infallibility of the senses as the *material media* of cognition is discussed and, so far as may be, proved. In cosmology, the falsity of the various theories of idealism is demonstratively exposed. The question of pantheism will occupy our attention later on in natural Theology. (*b*) A Judgment cannot reasonably be denied a place among analytical Principles, merely because it does not satisfy the demands of theories which are repugnant to the common sense of mankind and are perpetually involved in patent self-contradictions. Why should one doubt whether the Judgment that *three and three make six* is analytical, because a paradoxical writer has suggested that, perhaps, in some possible state of intellectual existence, *three and three might make seven?*

Now, to consider the objections separately:—

i. It is asserted that, if the so-called visible universe should turn out to be nothing more than a series of subjective impressions, the argument that has been developed in the declaration of the Thesis would break down. Let us suppose, then, for the moment, that the theory in question is true; and see whether the above assertion holds good. No one can doubt that there are sensations which are pronouncedly disagreeable; as, for instance, *sensations of excessive cold or heat*,—sensations connected with certain supposed *draughts of medicine*,—he sensation of *toothache* or of having *a supposed tooth*

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supposedly extracted,—sensations of phenomenal *whipping*, *abscission of the leg*, and the like. Moreover, every one is supremely conscious within himself, that, if he could but have his way, he would at once only too gladly rid himself of these subjective impressions. But, if so; nothing can be plainer than the fact, that these sensations are not in his own power. If, however, they merely depended for their origin upon the activity of his own soul, it stands to reason that they would be absolutely in his own power, whether to awaken or to repress. This conclusion is confirmed on other grounds. It continuously happens that, when one man experiences a certain defined series of sensations, all his neighbours find themselves subjected to the same. *Thomas*, for instance, feels on a sudden certain sensations of *rain;* and he finds that others complain of a like sensation. He thereupon has the sensation of a phenomenal *umbrella* in his phenomenal *hand;* and so, it would seem, have his neighbours. Therefore, these sensations could hardly be the production of one individual soul; but neither of the whole collection. For one and all desire to be rid of them, if they could. Well then, (supposing, for the sake of argument, that these sensations are so purely subjective as to claim no correlative object outside themselves), certainly, they are not *self-originated*. They must have been evoked by some external agent, as Malebranche has imagined. But there is a manifest constancy of order in these subjective impressions. For instance, whenever I have the sensation of a *thermometer at* 10° Fahrenheit, I find it invariably accompanied by a sensation of *sharp cold*, unless I happen to be provided with the additional sensation of *a fire*. Again: The agent who has forced such sensations on the soul must be endowed with intellect and, consequently, with free-will; not only because order, (as has been already remarked), connotes intellect, but also because it is repugnant that anything but spirit should be able to create unobjective representations in a spirit. Therefore, the demonstration of the Thesis remains as cogent as before. Let us, however, in conclusion assume (again, for argument's sake) the absurd hypothesis, that these sensations are the simple self-evolved creations of the human soul; even then, the demonstration would remain unshaken. For there is at all events a well established order in those sensations and a continuity of order. Furthermore: The human soul is gifted with free-will; so that, in accordance with the hypothesis, it could break in on the order and nature of sensations on a given occasion, if it pleased. The only resulting difference

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would be, that, according to sane teaching, the fact is conditioned by the Divine Will, whereas in this last hypothesis it would be conditioned by the human will.

ii. As to the various elaborate systems of German idealism and theories of the absolute, little count need be made of any objections to be derived from them. For they expressly, and often confessedly, contain such combinations of manifold contradictories, that they may be safely abandoned to their own unintelligibility. That difficulties against the truth of the present Thesis can be extracted from theories which identify the one and the many, the necessary and the contingent, mind and matter, being and absolute nothingness, will cause little or no surprise. Nevertheless, thus much may be said, that the self-evolutions, or positions, of the absolute are acknowledged to be *conditioned;* while the absolute is avowedly unconditioned, as its name implies. Those conditions are constant and continuous, and are evidently imposed, somehow or other, on the conditioned. Wherefore, the law of continuity assumes, in such philosophical systems, a more strictly logical universality than is here claimed for it.

iii. To the last argument it will suffice in reply to say, that the Judgment in question is an analytical Principle,—that it has been shown, by careful analysis, how agency according to natural impulsion or a physical law involves in its concept the notion of a constant order and of a law of continuity (which is all that is required to exhibit the analytical nature of the Judgment; while its application to sensile phenomena is reserved for the next Proposition),—and that the confirmatory argument only concerns those who, unlike ourselves, are minded to rescue these idealistic theories from the charge of opposing themselves to the axioms of common sense and the first principles of philosophy.

II. It may, further, be urged against the present Proposition, that the Judgment therein contained cannot be an analytical Principle, because its quantity is particular, not universal; and no particular Judgment can *of itself* be analytical. It is true that it may become so, as subaltern to a universal; but there is no pretension here to any such position. The *Minor* of the proof is obvious; for the adverb, *ordinarily*, i.e. *nearly always*, evidently limits the composition of the predicate with the subject.

ANSWER. It must be categorically denied that the said Judgment

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is a particular, and not a universal; however close a semblance it may *prima facie* bear to the latter. In effect, a Judgment may include a reservation which seems to restrict its universality, and yet be a true universal; provided that the restriction is not inherent in the order to which the Judgment applies, but is derived from another and, perhaps, nobler order. It is no derogation from the universality of the law by which bodies, under the impulsion of a single force, move in a straight line; if by counteraction of forces such as, for instance, the centripetal and the so-called centrifugal forces, the motion becomes orbital. After a like manner, any agent, acting according to a physical law or under the obedience of a natural impulsion, *in the natural order always under similar circumstances and conditions produces similar effects;* unless its action should be suspended or changed by some agent of a higher order. So far, then, as regards the natural order, the Judgment is, strictly speaking, a universal; the limitation, suggested by the adverb, arises from the possible action of a higher cause. And what does this mean, if not, that physical evidence and certitude are inferior to metaphysical evidence and certitude,—in a word, that the former are conditioned? But, if conditioned, the condition must find a place in the Judgment. It must not, however, be imagined that the Judgment itself is only physically evident; since the present contention is, that it is an analytical Principle. The *matter* of the Judgment, or the action (say rather, the effect of the action) of the bodily agent, is physically evident and certain; yet the form, or the conditioned truth of the position of the physically certain effect by the physical agent under the alleged conditions, is metaphysically evident and certain. So, it is metaphysically evident that physical evidence is conditioned.

III. Again, it may be urged, that the aforesaid Judgment cannot be analytical; because it is contingent, not necessary. The proof of the *Antecedent* is, that both its subject and its predicate exhibit real finite existences; but real finite existences are contingent, and, therefore, the connection between them must likewise be contingent. The truth of the *Minor* in the principal argument is thus established. *An agent acting according to a physical law or in obedience to a natural impulsion* is a real, actual existence; but such is the subject of the Judgment. Again: *The act of producing similar effects under similar circumstances and*

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conditions is a real, actual, existence; but such is the predicate of the Judgment.

ANSWER. It is not true that the Judgment is contingent or—to speak more accurately,—deals with contingent matter. Now, as to the proof: Both subject and predicate exhibit real, finite existence *ideally* and *in the abstract*—granted; in *the actual exercise of existence*, —no. Wherefore, if the subject and predicate are contingent, *the connection between the two must be likewise contingent*,—here, again, there is need of a distinction. If the subject and predicate exhibit the *actual exercise* of existence,—let it pass; if the subject and predicate exhibit existence *ideally* and in the *abstract*, the *nexus* must necessarily be likewise contingent,—no. The above distinction needs some explanation. If, in the Judgment now under consideration, the agent acting according to physical law, &c., were represented to the mind as actually *hic et nunc* producing a real, individual, effect; the logical connection between the subject and predicate would be contingent, not necessary. The reason is, that no act is absolutely necessary in all differences of time, save the Divine Act Which is God Himself. But, if the agent according to physical law, &c., and the effect such agent is supposed to produce should be assumed, (as is the case in the aforesaid Judgment), ideally and in the abstract, the logical *nexus* will be necessary, not contingent; because the connection is evolved from the *nature* of the subject, not from its *act*. Even in the hypothesis that no agent according to physical law were in existence, it would still remain for ever true that, if such an agent should exist, it would, under similar circumstances and conditions, produce similar effects, unless its causality were at any time impeded by the action of some superior cause.

IV. Another objection has been made to the truth of the present Thesis. The Judgment which pronounces that *from similar causes similar effects will be produced* is a merely gratuitous assertion; since it rests neither on the immediate relation of ideas contained in the subject and predicate nor on any testimony of experience. It cannot rest on the immediate relation between subject and predicate; because there is nothing repugnant in the notion that the future may be unlike the past. It cannot rest on any testimony of experience; because it is a contradiction in terms to associate experience with the future. Wherefore, the Judgment in question is not an analytical Principle; but is rather a common prejudice,

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traceable to the influence of custom or of habituation to a certain conjunction of facts in the past.

ANSWER. The *Antecedent*, viz. *that the Judgment in question is a gratuitous assertion*, is denied. As to the proof, it may be safely granted that the said Judgment does not rest on the testimony of experience. But the analysis already instituted justifies the denial, that it does not rest on the immediate relation of the ideas contained in subject and predicate; or, (to avoid the possibility of equivocation), it is denied that the notion of the predicate is not essentially included in the notion of the subject, duly and philosophically conceived. It is further denied that the said Judgment is a common prejudice; since this would imply that it is not based on a sufficient motive. Neither can the common consent to its truth be attributed by any reasonable man to either mere custom or mere habituation to a certain conjunction of facts in the past; though that conjunction, (which most men take to be causal), of facts in the past offers a subject, or experimental Judgment, to which this analytical Principle can be safely applied. The author of this objection has prepared the way for a rejection of the Principle that forms the subject of this Thesis, by raising kindred doubts touching the validity of the Principle of causality, by means of which the former is applied to experimental Judgments. These doubts are in great measure suggested, first of all, by the difficulty which the intellect of man not unfrequently experiences in determining the *nature* of the causal influx or of the act of the efficient cause in its effect. They are partly chargeable to an erroneous ideology. For it is supposed that only sensile perceptions are intuitive; while all intellectual ideas are reflex, having for their object either immediately or mediately a sensile perception. Now, sensile perceptions are representative of material phenomena, or the accidents of things, exclusively. Consequently, as nothing can give to another that which it has not itself, sensile perceptions can only object before the intellect the accidental phenomena which themselves represent. Whatever else, therefore, the mind cognizes, must be a pure coinage of its own. But such, it is hardly necessary to observe, is not the doctrine of the School touching the formation of ideas. The intellect never does, never could, accept the mere phantasm, or sensile representation, for its object; for there is too great a disparity of nature between the two. But the phantasm serves as an inciting cause and medium, (a sort of *lens*, so to say), through which the

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mind *immediately* intues the *nature* in act. Neither are we justified in concluding, because it cannot at times determine the *precise nature* of the causal influx, that it cannot cognize the *fact* of efficient causality. It should be further observed, that it does not intue the fact in the sensile representation, (or, rather, presentation); but in that *nature* in act, (which is its proper object), as related to the external phenomena. Let thus much suffice on a subject which is outside the proper sphere of metaphysics. In concluding the answer to this objection, an ambiguity in the proof for the second member of the disjunctive must be resolved. It is urged: *There is nothing repugnant in the notion that the future may be unlike the past.* This proposition must be distinguished. There is nothing repugnant in the idea that some facts or other in the future should be unlike sundry other facts in the past,—let it pass: There is nothing repugnant in the idea that an entity, energizing in obedience to a physical law or to a natural impulsion, should produce effects in the future dissimilar from those which it has produced in the past,—there is again need of a distinction: There is nothing repugnant in such a notion to a mind that denies, or is sceptical about, physical order, physical law, natural tendencies, and attributes everything to chance,—let it pass, nay, be it granted; there is nothing repugnant in the notion to a man of sane mind,—once more, a subdistinction: That such an entity of itself should produce dissimilar effects in the future naturally,—the proposition must be negatived; by the action of a superior cause and preternaturally, —a final subdistinction is necessary: Repeatedly, (except under circumstances already referred to),—no; occasionally,—yes.

V. Once more: It has been objected that the Judgment in question is not an analytical Principle, since it is not metaphysically evident. The common consent, therefore, of mankind in its favour must be traced to an instinct of our nature, which with an irresistible force impels men so to judge.

ANSWER. As to the primary assertion, the answer has been already given. The theory, by which it is attempted to account for the universal acceptance of the truth of this Principle, must be sternly rejected. For it supposes the existence of intellectual certainty without evidence, and the possibility of a judicial act of the mind in the absence of any formal object. The further discussion of this last paradoxical assumption is reserved for the next Chapter.

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VI. Finally, an objection may be brought against the second member of the Principle in question. For, whatever may be thought concerning the question of an entity that is energizing according to some physical law, it seems impossible to admit that any cause, however excellent, could interfere with an entity that is acting under a natural impulsion. Indeed, such an admission would be in open opposition to the doctrine, repeatedly enforced in these pages, that a nature or essence and, therefore, the essential tendencies of a nature are unalterable even by the Divine Will. But, if such tendency in certain exceptional cases could be arrested, it would *ipso facto* be capable of alteration. Therefore, in its case the adverb, *ordinarily*, i.e. *for the most part*, should be omitted.

ANSWER. The above would be a real difficulty, if it were maintained that the natural tendency itself could be arrested or changed. So much, however, has been neither asserted nor intended. On the other hand, it is possible that a superior cause may exceptionally arrest the *act* or *effect* of such tendency; for both these are accidental. But, in such cases of preternatural disturbance, the natural tendency remains as before.

PROPOSITION CXXVI.

By virtue of the Principle of causality, as supplying a sufficient motive for the application of the analytical Judgment, announced in the preceding Thesis, to specified physical phenomena; certain empirical Judgments assume a moral universality which makes them physically certain, and are thereby elevated to the rank of experimental axioms.

I. THE FIRST MEMBER of the present Proposition,—which declares that, *by virtue of the Principle of causality, the analytical Principle already announced can be applied to specified physical phenomena*, (i.e. to those wherein a constant order has been detected by observation or experiment),—is thus proved. Presupposing a due experience of these physical phenomena, or facts of nature, it is often possible to determine, by virtue of the Principle of causality, that certain agents act according to a physical law or in obedience to a natural impulsion. But, this once known, it is possible to apply the aforesaid Principle to such facts; and so, to form a Judgment touching the constancy with which those causes will produce similar effects

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under similar circumstances and conditions. The *Antecedent* is thus declared. After careful observation and experiment, it not unfrequently becomes patent to the observing or experimentalizing student, that similar determinate effects arise from causes of the same species; although the said causes are themselves entitatively many, distinct, and widely separated from each other in time or space, or both. Thus, for instance, the *electrical experiments* of Franklin in America agree in their results with those of Faraday; and both, with the results of experiments being made, at this hour, in the various class-rooms of the civilized world. So, again, *in the instance of projectiles,* the trajectory is determined by the same laws, whether the experiment be made in England or Australia, —whether made in the last century or the present. *Wheat has been sown* annually, for some six thousand years, in nearly every quarter of the globe; yet the seed sown has never yielded anything but wheat. Having ascertained, then, that similar determinate effects are constantly produced by these causes which are specifically the same, the Principle of causality assists us in drawing the certain conclusion, that the above-named agents act on some uniform and constant principle. Now, this principle is either intrinsic to, and connatural with, each of the causes, or it is extrinsic and not connatural, i.e. it is a certain order or rule of energy to which these agents have been subjected. In the one case, we are in presence of a natural impulsion; in the other, of that which has been called a physical law.

So far, the proof has been given, more or less, in form. It may be worth while, however,—considering the vital importance of the subject,—to elaborate the argument by the easier method of analysis. Let us go, then, to the concrete; for it will facilitate the examination proposed. My mind is stimulated, we will say, to an act of thought by the *phantasm*, or sensile perception, of a *cat*. Though my mind has been thus aroused from its pure potentiality and native state of indifference by the presence of the phantasm, and though the phantasm has determined it to the special object which has been *hic et nunc* presented within its field of view; the intellect, nevertheless, intues, not the phantasm or sensile perception, (unless, indeed, its act is psychologically reflex; and this forms no element in the present analysis), but, through it and the material acts which it exhibits, the feline nature, however imperfectly, yet directly and in itself. At once it understands the object to be an entity, a sub-

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stance, a living substance, an animal substance, and an animal substance of such a definite type. By careful synthesis of the cat's *acts*, (the word is here used in its most generic sense), it cognizes its growth, its habits, its disposition. To put it yet more plainly:—There are certain acts of the cat, that have constantly and uniformly presented themselves to my mind through the medium of sensile perceptions, whenever that animal has come across me and, moreover, belong to it exclusively, so far as common experience and my own experience in particular have gone. Such are, for instance, its mewing, purring, stealthy advances on its prey, and other like properties,—to say nothing of its peculiar configuration, and other distinctive notes of being. In the former class of peculiarities I recognize a spontaneity of act. In the latter I perceive the material properties of a common nature. In both, by help of the Principle of causality, I know that the beast is in act by virtue of a natural impulsion; and I thereby learn much about its nature. So much for an agent acting under natural impulsion. But, again, it has been concluded, from the testimony of sensile phenomena, that the earth moves round the sun. By my knowledge, though imperfect, of the earth's nature and of the nature of matter in general, I know that the orbital movement of the former does not flow from its essence. On the contrary, if at rest and left to itself, it would remain motionless by that property of indifference to rest or motion, apparently essential to bodies, which has been called by Kepler the *vis inertiæ*. If under the accidental direction of one force, I know that it would move in a straight line, supposing that it started from rest or was moving in the direction of the force. I know, further, that its orbital motion is due to the interaction and composition, as they say, of two forces or *quasi* forces. But no force external to the earth itself or any influence from the action of such force can flow from the earth's essential nature; otherwise, this latter could not have an antecedent indifference to motion. Yet, on the other hand, the motion, though variable in itself, follows a constant law, and has done so for as long a time as historic memory can recall. By virtue of the Principle of causality applied to these facts, I am justified in eliminating the agency of natural impulsion, and to realize to myself the presence of a physical order,—of that which, by common consent, has been called *a physical law*. If I am told, that all this durable order is the mere result of a fortuitous concourse of atoms,—or that the sensile phenomena on which my mind

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has, as it were, been working, are nothing but products of my own psychical activity,—or that the reigning order, apparent in an unknown to me and to me unenergizing object, is the pure creation of *à priori* concepts in my mind: the intuitions of my understanding proclaim war against the gratuitous assumptions, each and all; my primitive consciousness is wounded; my natural senses put in a demurrer; my common sense rises in rebellion; the general voice emphasizes a contradiction; the fautors of these empty dreams give the lie to them in their practical life. I pass them by with a smile. They are not worth a protest.

Before passing on, let it be again remembered, that the instances adduced in the course of the above analysis are merely used as illustrations. They are not intended to prejudge, one way or the other, *physical* theories of whatsoever kind.

II. THE SECOND MEMBER of this Proposition,—in which it is affirmed that, *by virtue of the analytical Principle announced in the preceding Thesis, certain empirical Judgments assume a moral universality and are physically certain*,—is thus declared.

It may be as well to premise, that by *moral* universality is to be understood that which has been *practically* accepted as universal in the common estimation of mankind. Well, then, if it has been evidently and certainly ascertained that certain material agents act in obedience to either a physical law or a necessary impulsion of their nature; it is plain as plain can be that, (unless the action of a superior cause should intervene), those same causes, under similar conditions and circumstances, will *always* produce similar results. For example, the sun has risen (to adopt an accepted phrase) every morning, during the entire length of the individual experience of each one among us. We have satisfactory and abundant moral evidence that it has done the same, since the commencement of the historic period. Moreover, the time of sunrise is so nicely regulated by an established order, that it is prophetically given, each year, in the almanacs of every country. No one doubts, therefore, that the sun will rise again to-morrow, as before; and that it will rise at the time predicted. No one doubts either, that after midsummer the days will begin to draw in. Yet, if the supreme Creator and Ruler of the world should have determined to bring time to a close at once, the sun would not rise again on the morrow. Consequently, the empirical Judgment can never assume an absolute, but only

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a conditioned, universality. It is physically, not metaphysically,—practically, not theoretically,—certain. Wherefore, such empirical Judgments are often *elevated to the rank of experimental axioms;* but never can be absolute, necessary truths. For they deal with contingent existences as such; and, for this reason, can never lay claim to metaphysical evidence.

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CHAPTER V.

SYNTHETICAL *À PRIORI* JUDGMENTS.

DESCARTES is the true father of all those Protean new philosophies which have appeared in continuous succession from his time until now. By establishing a universal doubt at the threshold of knowledge as the necessary condition for acquiring philosophical cognition, he disastrously diverted the course of scientific inquiry; nay, more, he so dammed it up at the fountain head that there could be no escape save by a paralogism. For he extended this universal doubt to all the faculties of the human soul; so that, under his guidance, the student of philosophy was taught to doubt, at the outset, the infallibility of the very *media* of cognition, till that infallibility had been established by satisfactory proof. But such a task is plainly impossible; for proof of whatsoever kind presupposes, as a *conditio sine qua non*, the infallibility of the reason. Descartes only escapes the difficulty by a tacit restriction of his universal doubt at the first step he takes,—a restriction which enlarges its periphery in proportion as he proceeds. His first and fundamental position is this: *I think; therefore, I am.* But how does he know for certain that he thinks, unless he already trusts to the infallibility of his consciousness or, in other words, to the act of his intellect as psychologically reflex? We will say nothing of the pre-position of the *I* in the Antecedent. In like manner, he draws from his *data* certain conclusions which are preparatory to his subsequent demonstration of the infallibility of the faculties. Yet the certainty of these anticipatory conclusions necessarily depends on the acknowledged infallibility of the reason. Once more: The infallibility of the reason has to be proved in common with that of the other faculties. But, in order to be able to prove, you must presuppose the infallibility of the understanding that intues the premisses and the infallibility of the reason that draws the conclusion; otherwise, of what value is your proof? All that he did, therefore, for philosophy, (and

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a disastrous doing it proved to be), was to interpose at the portal of science the necessity for a solution of the insoluble.

In the present Chapter, however, we are not concerned with the inconsequences of Descartes. That which concerns us is this; that the theory of the French philosopher diverted scientific inquiry from its previous quest of objective truth, and assigned to it the impossible task of demonstratively establishing the infallibility of those faculties which are the naturally appointed *media* of cognition. Heretofore it had been assumed as a primary and peremptory postulate, in itself immediately evident, that the faculties of the human soul were practically infallible in their normal exercise and under requisite conditions. But, under the new philosophy nothing was to be taken for granted,—not even the most axiomatic truths. Hence, two results: Philosophy in no long time came to be identified exclusively with ideology and psychology, till it was finally distilled into a '*transcendental logic*.' Secondly, many of the disciples of this new critical system, after the pattern of Descartes, were induced, either by their natural bent or by the seeming preponderance of motives, to exempt, some one, some another, of the *media* of cognition from the uncertainty of doubt; while retaining their scepticism as touching the infallibility of the rest. Others, again, doubted equally of all.

To begin with the sensists[1]:—These confined certainty of knowledge within the limits of sensile perception; and thereby implied an absolute trust in the infallibility of the senses. But at once they were confronted with a difficulty of no little moment. The stimulus given to the investigations of experimental physics had long recalled attention to a fact, (well known to the ancients), that not all sensile perceptions are *formally* representative of the object. Those of hearing, smell, and taste, undoubtedly are not. Those of sight and touch are only partially so, inasmuch as they represent the primary accidents, as they have been called. Yet, even in the case of these latter and still more pronouncedly in that of the rest, the sensile perception of itself does not exhibit the essential nature of the object, but only one or more of its accidental conditions. Neither does it formally represent the object, (i.e. the material substance), at all, *as such;*

[1]. Some have drawn a distinction between materialists and sensists; in that the former deem sensile perception to be representative, in some way or other, of a material object external to sense, while the latter regard it as a purely subjective phenomenon. But these latter we should prefer to class with idealists, understanding by the term all those who deny to intellectual and sensile perception any really objective value.

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but only implicitly and, as it were, by accident. This truth, however, would not have created any embarrassment, had it not been coupled with a grave ideological error, to which allusion has been made more than once in preceding pages. It seems to have been accepted as a sort of axiom by the modern schools of philosophy, that the only immediate object of the intellect in its perception of material things is the phantasm, or sensile representation, which evokes the intellect out of its potential indifference into act. The logical outcome of such an opinion is plain. The act of the intellect, like that of any other faculty, is defined by its object. But the phantasm, (which, according to the hypothesis, is the only object of the intellect), exhibits nothing but certain accidental conditions of the material object and not the substance itself. Therefore, the understanding can intue, and the reason can deduce, only that which is included within the sphere of such accidental conditions. All beyond is a pure evolution of unrepresentative ideas; and can claim no relationship with the object, or supposed object, that at most occasioned it. But the Peripatetic philosophy teaches that the intellect could not possibly have the phantasm for its object, because there is an essential disproportion between the two,—that, consequently, the sensile representation needs purification, needs transformation, in order even to be brought in contact with intellectual action,—that it is, at the most, a kind of lens, through which the mind intues the nature or essence of the material object,—that the proper object, therefore, of the intellect is the specific nature of the material thing presented to it,—and that it tolerates the material conditions and individual notes represented in the phantasm only because, in the instance of these bodily things, it is first awakened into energy through the medium of the organs of that body with which it is substantially united. Once adopt, then, the sensist theory touching the formation of ideas and the exclusive infallibility of the sensile faculty; it will follow that all truth, so far as the human mind is concerned, must be found in the material, the phenomenal, the individual,—that external things are a mere combination of accidents,—that universals and abstract ideas are no other than self-created puzzles, or playthings, of the intellect,—that the metaphysical science is purely subjective and, therefore, without any corresponding object,—and that the sum of reality is limited to the sphere of sensile perception. Such was, more or less, the philosophy of Locke in its practical development; such, the philosophy of the

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sensists. Some of them, indeed,—notably Locke,—would seem to have admitted that there was some *substratum* or other of these accidents;—a substance which reduced them to a common unity. But then it counted for nothing; since it lay in outer darkness impervious to the mind of man. It might be there, or it might not; but, if it were, it was as though it were not, because it was an unknown.

Others, again, there were who, under the influence of a loftier and less unreasonable bias, rejected the infallibility of the senses as the material *medium* for acquiring true and certain cognition; while they maintained the infallibility of the intellectual faculties. Accordingly, with Berkeley they held sensation to be a merely subjective impression, in no wise representative of any corresponding objective reality. The logical deduction from this premiss is evident. It stands confessed that the whole visible universe is *de facto* nothing but a psychical illusion; and that objective truth is only to be found in the analytic Judgments of the intellect. This is the philosophy of idealism.

It now only remained to combine in one the doubts or negations of both schools, so as to reproduce the scepticism of the Academics; and the ungrateful task was accomplished by Hume.

If a more elaborate exposition of the ideological and psychological opinions propounded by this Scotch writer is here presented to the reader, it is simply because of the intimate relation which these opinions bear to the subsequent ideology of Kant. Hume, then, starts with a re-affirmation of that fundamental Principle of the sensists, that all human knowledge worthy of the name is exclusively derived from sensile perception or, as he calls it, from 'impression,' 'feeling or sentiment.' But, at the same time, he so far agrees with the idealists, that these sensile impressions afford no knowledge of the object, (if there be one), which is vulgarly supposed to excite or cause them. Thus, he writes, 'It must certainly be allow'd, that nature has kept us at a great distance from all her secrets, and has afforded us only the knowledge of a few superficial qualities of objects, while she conceals from us those powers and principles, on which the influence of these objects entirely depends[1].' He adds yet more boldly, '*Tis allowed on all hands, that there is no known connexion betwixt the sensible qualities and the secret

[1] *Essay IV. on Sceptical doubts, Part II.*

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powers; and consequently, that the mind is not led to form such a conclusion concerning their constant and regular conjunction by anything which it knows of their nature[1].' In these quotations Hume seems to allow, with the sensists, that sensile perceptions have an objective value of some sort or other. One is anxious to know more precisely what that objective value is. Hume thus replies: 'As to those *impressions*, which arise from the *senses*, their ultimate cause is, in my opinion, perfectly inexplicable by human reason, and 'twill always be impossible to decide with certainty, whether they arise immediately from the object, or are produc'd by the creative power of the mind, or are deriv'd from the author of our being[2].' Therefore, their real objective value from a scientific point of view is absolutely *nil*. As a fact, such is the expressed judgment of Hume. Philosophy teaches us, he says, 'that nothing can ever be present to the mind but an image or perception, and that the senses are only the inlets, thro' which these images are receiv'd, without being ever able to produce any intercourse betwixt the mind and the object[3].'

But, if the sensile impressions reveal to us nothing but themselves, and in themselves are isolated, transitory, ever-changing, modifications of what, for sake of intelligibility, we will take leave to call the soul; how does it happen that they, as it were, instinctively form themselves into connected groups, each one of which has its own supposed individual unity? How is it that to us they seem to cluster round one and the same object, as though it were their root and common bond of union? Again: Supposing that this universal system of grouping can be accounted for; whence do these bundles, or collections, of sensations derive their conceived sameness, or identity, through successions of time? To put it in the concrete: —I experience sensations of sweetness, of stickiness, of brown colour, of a multitude of crystalline forms. Why does my mind without effort unite them under one and refer them to brown sugar? Further: The said sensations were mine; say, in the morning at breakfast. In the evening at tea I experience a *new* series of sensations similar to the former; yet I attribute them without a shadow of doubt to the supposed brown sugar of the morning that was present, as it seemed to me, on the table. How is this? May it perchance be, that these complex and multiform unifications owe

[1] *Essay IV. on Sceptical doubts, Part II.*

[2] *Treatise on human nature, B. I, Part III, Sect. V.*

[3] *Essay XII, Of the Academical or Sceptical Philosophy, Part I.*

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their origin to the intellectual ideas which have the sensile impressions for their object? No, this cannot be: For Hume tells us, that ideas or concepts are mere copies of our sensile impressions; and the only difference between the two, as it would appear, consists in this, that the former are more feeble impressions, while the latter are more lively ones[1]. Accordingly, Hume's test of the reality of an idea is, that it can be traced to one or more sensile perceptions as an exemplar to its prototype. All other concepts are a product of the imagination, which, 'tho' it cannot exceed that original stock of ideas, which is furnish'd by the internal and external senses, has unlimited power of mixing, compounding, separating and dividing these ideas, to all the varieties of fiction and vision[2].' Indeed, Hume seems to hold that the mind is wholly passive before these sensile impressions. But, if the mind is thus wholly passive in presence of an ever-changing succession of disconnected phantasms, the old difficulty recurs. How is knowledge of any kind possible? Evidently,—and Hume admits as much,—there must be some association, or relation, or bond of union; for it is impossible the same simple ideas should fall regularly into complex ones, (as they commonly do), without some bond of union among them, some associating quality, by which one idea naturally introduces another[3].' Accordingly, Hume attributes this combination of sensile perceptions, (the word, *perception*, is advisedly used, as denotative of the 'idea' that accompanies and is the shadow of the sensile impression), to a twofold principle,—viz. an active principle in man, and a passive property in the sensile impressions, or sentiments. The former he calls *Belief*. This Belief is not intellectual; it is a species of natural instinct, 'which no reasoning or process of the thought and understanding is able, either to produce, or to prevent[4].' The latter consists of certain natural relations. These relations may be reduced to three; resemblance, contiguity of place and time, and causation. What he understands by causation, will be explained presently. Now, seeing that these *natural relations* are placed by Hume in the subjective sensile impression and not in the objective reality which (if there be such a thing) is, together with its powers, entirely out of the reach of human knowledge; it is plain that, so far as we can perceive, space and time are purely subjective

[1] *Essay II, on the Origin of ideas.* [2] *Essay V, Sceptical Solution, &c., Part II.*
[3] *Treatise on human nature, B. I, Part I, Sect. IV.*
[4] *Essay V, Sceptical Solution, &c., Part I.*

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conditions. The same may be said, of course, of the two other specified relations. But what is the origin, what the foundation, of these supposed relations? Hume shall explain in his own words. 'These are therefore,' he writes, 'the principles of union or cohesion among our simple ideas, and in the imagination supply the place of that inseparable connexion, by which they are united in our memory. Here is a kind of *Attraction*, which in the mental world will be found to have as extraordinary effects as in the natural, and to shew itself in as many and as various forms. Its effects are everywhere conspicuous; but as to its causes, they are mostly unknown, and must be resolved into *original* qualities of human nature, which I pretend not to explain.' He adds with a charming simplicity: 'Nothing is more requisite for a true philosopher, than to restrain the intemperate desire of searching into causes[1].' Under the shadow of this theory there arises an ideological problem of the gravest moment. Is there, according to such teaching, any assignable difference between what logicians are wont to call a real, and a fantastic idea. To put it in the concrete:—Is there any difference betwixt the idea of the bread that I am eating or that of the speech, (as I am now reading it), delivered last night in the House of Commons, and the idea of a merman or a fairy? If so, what is the nature of that difference? Hume gives answer: 'The difference between fiction and belief lies in some sentiment or feeling, which is annex'd to the latter, not to the former, and which depends not on the will, nor can be commanded at pleasure. . . . Belief is nothing but a more vivid, lively, forcible, firm, steady conception of an object, than what the imagination alone is ever able to attain. . . . Belief consists not in the peculiar nature or order of ideas, but in the *manner* of their conception, and in their *feeling* to the mind. I confess, that 'tis impossible perfectly to explain this feeling or manner of conception. . . . The sentiment of belief is nothing but a conception of an object more intense and steady than what attends the mere fictions of the imagination.' That there may be no mistake as to what he means by belief, Hume explains that it is 'that act of the mind, which renders realities, or what is taken for such, more present to us than fictions, causes them to weigh more in the thought, and gives them a superior influence on the passions and imagination[2].' So then, the whole objective value of ideas collapses;

[1] *Treatise on human nature, B. I. Part I, Sect. IV.*

[2] *Essay V, Sceptical Solution, &c., Part II.*

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and human perception never passes beyond the limits of the perceiving subject. Sensations are representative of nothing external to themselves; and the only difference between a real idea and a simple imagination is to be found in the greater vividness, force, and steadiness of the concept in a real idea.

What, then, becomes of the *natural relation* of causality? A cause requires an effect; since the latter is the correlative of the former. But in these successive sensile impressions which are in perpetual flux, what traces can possibly be discovered of anything like causal relation? Hume replies that they are to be found in the simple succession itself,—i.e. in the fact that the impressions are successive. If two sentiments, or sensile perceptions, present themselves over and over again in an unvarying sequence; the mind becomes habituated to this sequence, and there springs up an instinctive belief that the subsequent in the sequence is in some sort the effect of the precedent. 'It appears,' writes Hume, 'that, in single instances of the operation of bodies, we never can, by our utmost scrutiny, discover anything but one event following another; without being able to comprehend any force or power, by which the cause operates, or any connexion betwixt it and its suppos'd effect.... The same difficulty occurs in contemplating the operations of mind on body. . . . The authority of the will over our own faculties and ideas is not a whit more comprehensible: so that upon the whole, there appears not, thro' all nature, any one instance of connexion, which is conceivable by us. All events seem entirely loose and separate. One event follows another; but we never can observe any tye betwixt them. They seem *conjoin'd*, but never *connected*. And as we can have no idea of anything, which never appear'd to our outward sense or inward sentiment, the necessary conclusion *seems* to be, that we have no idea of connexion or power at all, and that these words are absolutely without any meaning, when employ'd either in philosophical reasonings, or common life. . . . When we say, therefore, that one object is connected with another, we mean only, that they have acquir'd a connexion in our thoughts, and give rise to this inference, by which they become proofs of each other's existence[1].' Thus, then, according to Hume, there is nothing objectively real in the concept of causation. Nay, further: This concept does not rest on any real activity or power

[1] *Essay VII, of the Idea of necessary Connexion, Part II.*

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in one subjective sentiment over another, but merely on an habitual sequence in the series of sensile impressions.

Since, then, sensile perceptions, according to this sceptical theory, are the only undoubted realities that remain to us; two questions await an answer,—questions of the weightiest import.

The first is, What is mind according to this new philosophy? Hume has his answer ready. 'What we call a mind,' he writes, 'is nothing but a heap or collection of different perceptions, united together by certain relations, and suppos'd, tho' falsely, to be endow'd with a perfect simplicity and identity[1].' So, again, he describes men as being 'a bundle or collection of different perceptions, which succeed each other with an inconceivable rapidity, and are in a perpetual flux and movement[2].' 'They are the successive perceptions only, that constitute the mind; nor have we the most distant notion of the place, where these scenes are represented, or of the materials, of which it is compos'd[3].' Thus perish at once the individuality and identity of man.

And this introduces that second question which has been already mooted in an earlier part of the present review. Is the concept of identity, or sameness, a mere trick of the imagination? Though, how, by the way, there is any room for a faculty of imagination in Hume's account of man, it is a puzzle to see. Is the identity which I instinctively attribute to that which is for me a real, external object, such as the house I live in, the trees and plants that I look out upon from the window, the terrier that crouches at my feet,—is the personal identity which I undoubtingly recognize in my parents, brothers, servants, friends,—a pure illusion? Is, too, that persistent self-consciousness,—that constant sense of my own identity, which convinces me that I am ever myself and links on my past to my present,—an utter unreality, a baseless assumption? Can I not say *I was*, without error? Such, at all events, would seem to be the position of Hume. 'Thus,' he observes, 'the principle of individuation is nothing but the *invariableness* and *uninterruptedness* of any object, thro' a suppos'd variation of time, by which the mind can trace it in the different periods of its existence, without any break of the view, and without being oblig'd to form the idea of multiplicity or number. I now proceed to show why the constancy of our (sensile) perceptions makes us ascribe to them a perfect

[1] *Treatise on human nature, B. I, Part IV, Sect. II.*
[2] *Ibidem, Sect. VI.*
[3] *Ibidem.*

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numerical identity, tho' there be long intervals betwixt their appearance, and they have only one of the essential qualities of identity, viz. *invariableness*. . . . To enter, therefore, upon the question concerning the source of the error and deception with regard to identity, when we attribute it to our resembling perceptions, notwithstanding their interruption; I must here recall an observation, which I have already prov'd and explain'd. Nothing is more apt to make us mistake one idea for another, than any relation betwixt them, which associates them together in the imagination, and makes it pass with facility from one to the other. . . . We find by experience, that there is such a *constancy* in almost all the impressions of the senses, that their interruption produces no alteration on them, and hinders them not from returning the same in appearance and in situation as at their first existence. I survey the furniture of my chamber; I shut my eyes, and afterwards open them; and find the new perceptions to resemble perfectly those, which formerly struck my senses. . . . An easy transition or passage of the imagination, along the ideas of these different and interrupted perceptions, is almost the same disposition of mind with that in which we consider one constant and uninterrupted perception. 'Tis therefore very natural for us to mistake the one for the other[1].' Now, as to personal identity: 'If any impression,' says Hume, 'gives rise to the idea of self, that impression must continue invariably the same, thro' the whole course of our lives; since self is suppos'd to exist after that manner. But there is no impression constant and invariable. Pain and pleasure, grief and joy, passions and sensations succeed each other, and never all exist at the same time. It cannot, therefore, be from any of these impressions, or from any other, that the idea of self is derived; and consequently there is no such idea. . . . The identity, which we ascribe to the mind of man, is only a fictitious one, and of a like kind with that which we ascribe to vegetables and animal bodies. It cannot, therefore, have a different origin, but must proceed from a like operation of the imagination upon like objects[2].' In few words, identity supposes invariableness and uninterruptedness of the object which is supposed to be the same. But there is no real object, as has been shown, save our sentiments or sensile perceptions, which are in a perpetual flux and consequently, never remain uninterrupted.

[1] *Treatise on human nature, B. I, Part IV, Sect. II.*
[2] *Treatise on human nature, B. I, Part IV, Sect. VI.*

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Therefore, identity, whether attributed to lifeless substances (so called), or to plants, or to animals, or to men, or to ourselves, is a simple trick of the imagination. To such lengths, indeed, does Hume carry his consistency, that he affirms he may be truly said not to exist, when the sensile perceptions cease for a time, as in a sound sleep.

Once more: The reality of existence vanishes under the same sceptical treatment. 'The idea of existence,' such are the words of Hume, 'is the very same with the idea of what we conceive to be existent. To reflect on any thing simply, and to reflect on it as existent, are nothing different from each other. That idea, when conjoin'd with the idea of any object, makes no addition to it. Whatever we conceive, we conceive to be existent. Any idea we please to form is the idea of being; and the idea of a being is any idea we please to form[1].' Therefore, whatever we conceive, for the simple reason that we think it, is *ipso facto* existent; consequently, existence is exclusively ideal.

It only remains to see how God fares in this new system. 'If the external world,' writes Hume, 'be once call'd in doubt, we shall be at a loss to find arguments, by which we may prove the existence of that Being or any of his attributes[2].' Yet, as we have already seen and as will appear more plainly in the following quotation, Hume professes to doubt the existence of an external world. There is, therefore, nothing certainly known, nothing certainly existent, save these sentiments,—these sensile impressions and perceptions. But do these connote an external object that occasions them and, consequently, a world outside us? Hear what Hume has to say about the matter: 'By what argument can it be prov'd, that the perceptions of the mind must be caus'd by external objects, entirely different from them, tho' resembling them (if that be possible) and could not arise either from the energy of the mind itself, or from the suggestion of some invisible and unknown spirit, or from some other cause still more unknown to us[3]?'

In conclusion, the results of this sceptical doctrine in regard of the cycle of sciences may be summed up, as follows, in the author's own words: 'It seems to me, that the only objects of the abstract sciences or of demonstration are quantity and number' (the subject of mathematics), 'and that all attempts to extend this more perfect

[1] *Treatise on human nature, B. I, Part II, Sect. VI.*
[2] *Essay XII, of the Academical or Sceptical Philosophy, Part I.* [3] *Ibidem.*

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species of knowledge beyond these bounds are mere sophistry and illusion.... When we run over libraries, persuaded of these principles, what havoc must we make? If we take in our hand any volume of divinity or school metaphysics, for instance; let us ask, Does it contain any abstract reasonings concerning quantity or number? No. Does it contain any experimental reasonings concerning matters of fact or existence? No. Commit it then to the flames; for it can contain nothing but sophistry and illusion[1].'

As will be seen, the above account of Hume's theory has been given, for the most part, in the words of the author. It is probable that the attentive reader will have noticed, as he went on, the manifold self-contradictions, the general ambiguity in the use of terms, which are conspicuous in the writings of this author. But it would be altogether beside the purpose of the present Chapter and the general plan of the Work, to expose these, or to unravel the sophisms by which its author has attempted to give a certain air of plausibility to the theory in question. Hume has been introduced here only as a help towards a more definite understanding of the Kantian philosophy. For it is generally admitted that the writings of the Scotch sceptic had a pronounced influence on the philosophical views of the recluse of Königsberg. In order that this purpose may be the more effectually attained, a succinct summary is here subjoined of Hume's doctrine.

i. The mind is a mere bundle of sensile impressions and perceptions. All so-called ideas, other than mere tricks of the imagination, are nothing but fainter repetitions of the former.

ii. It is not only uncertain, but improbable, that these sensile representations are awakened in us by an external world. They may be self-produced. Even if there be any objective reality, it is quite hidden from us.

iii. It is a fact of which we are conscious, that these sensile impressions, or rather perceptions, are found to be grouped together into diverse complex unities, with correlations, affinities, &c., without which anything like knowledge would be impossible.

iv. Imagination and memory assist in the generation of complex perceptions.

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[1] *Essay XII, of the Academical or Sceptical Philosophy, Part II.* In all the quotations from Hume, the italics and capitals are exclusively those of that author. The same plan will always be observed, unless notice is given to the contrary, with the exception of quotations from St. Thomas.

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v. There are two Principles which principally account for this composition of perceptions, or ideas,—one subjective; the other objective, as it were.

vi. The subjective Principle is faith.

vii. This faith is described at once to be a sentiment, a feeling, an intellectual act, and a stronger and more lively act of the imagination. Hence, the only difference between a real and a fantastic idea is a difference of degree.

viii. There is, besides, a principle of union in the sensile perceptions themselves, which consists of certain *natural relations* therein discoverable.

ix. These relations are reducible to three, viz. resemblance, contiguity, causation.

x. Contiguity includes the conditions of time and place, whose forms are the subject matter of mathematics.

xi. Causation is that relation which plays the most prominent part in the conjunction of simple sensile impressions. It is really nothing but the constant and uniform sequence of two such impressions, which deludes the imagination into the belief that the precedent is cause and that the subsequent is effect.

xii. The conceiving of the future perseverance of such sequences (i.e. physical laws) is due to the influence of habit or custom. We have become accustomed to the sequence by repeated experience; and so, easily fall into the illusion of presuming the like in the future. The idea is an act of belief.

xiii. These *natural relations* are, so far as our knowledge goes, purely subjective; since the sensile impression is their adequate object.

xiv. The origin or cause of these sensile impressions is unknown.

xv. *À fortiori*, the origin or cause of the aforesaid *natural relations* is unknown. They are 'resolved into original qualities of human nature' (i.e. of a bundle of sensile perceptions), 'which cannot be explained.'

xvi. There is nothing objective in the idea of existence. Everything that is conceived, for the simple reason that it is conceived, is existent.

xvii. The idea of the identity of external things, whether inanimate or living, is a mere trick of the imagination. The same may be said concerning the idea of one's personal identity.

xviii. Beyond sensile perceptions and their combination in the manner aforesaid, there are no other mental acts that deserve the name.

xix. It is impossible to prove the existence of a God.

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xx. Universal, abstract truths are a trick of the imagination.

xxi. Consequently, all sciences, properly so called, are worthless. Exception is made in favour of mathematics; because it deals with one of those *natural relations* discoverable in sensile impressions.

xxii. Theology and metaphysics are nothing but sophistry and illusion.

And this is called philosophy! It destroys all evidence and certainty. It renders the acquisition of scientific truth, with but one exception, an impossibility. It annihilates all that is objective; and makes human thought subserve no other purpose than that of retaining a faint, imperfect image of the impressions of sense. There is no spiritual reality outside us, no spiritual reality within us; but only certain material, or make-believe material impressions whose combination and mutual affinities are either a mere trick of the imagination, (the imagination, be it observed, of a bundle of sentiments), or, at the best, are the result of certain natural relations of purely subjective sensile impressions. Hume's scepticism is the *reductio ad absurdum* of the universal doubt of Descartes. Nor should we forget the apology of the former, (well remembered by Kant), that 'we shall at least, by this means, be sensible of our ignorance, if we do not augment our knowledge[1].'

Kant undertook the task of constructing a foundation for scientific knowledge amid the chaotic heap of ruins which the scepticism of Hume had left. He appears to have accepted the results of Hume's demolition touching the most important points as a just necessity; so that he attempted, as has just been remarked, a construction, not a *re*construction, of scientific certainty. He scorned somewhat fiercely the ideological and metaphysical Principles of the School, (which we are bound, therefore, to suppose that he had mastered); and, catching at the crudely developed idea of Descartes, took upon himself, not to accept as immediately evident the infallibility of the several *media* of cognition, but, by a *transcendental* deduction (as he terms it) to establish the limits and, within those limits, the objective certainty of human knowledge and, as a consequence, to determine the value of the several faculties as *media* of conceptual truth. Hence the title of his great work, THE CRITIQUE OF PURE REASON.

Before proceeding to expose the teaching of this German philosopher, two observations must be premised.

[1] *Essay IV, Sceptical Doubts, Part II, v. f.*

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i. The doctrine of Kant (as might be anticipated from an animadversion already made) is all but entirely limited to the spheres of ideology and psychology; the former of which deals with the genesis of ideas, the natural infallibility of the faculties as *media* of cognition and of conceptual truth, and with evidence and certainty as well objective as subjective. Accordingly, Kant's *Critique of Pure Reason* can only claim the notice of the metaphysician partially and indirectly. The brief account of it that will follow has been inserted here for the sole purpose of rendering a satisfactory account of those synthetical *à priori* Judgments of Kant, which play a part in the system he has invented so important that the two must stand or fall together. For it does concern the metaphysician to determine, whether these Judgments are admissible, or not, as Principles of scientific cognition. It must not be expected, then, (to repeat a monition already premised in the instance of Hume), that any refutation of the system as a whole, any exposure of its manifold paralogisms, will be attempted. This is not the place. Nevertheless, it will easily be seen from an observation just made, that arguments, (if valid), which demonstrate the impossibility of these synthetical *à priori* Judgments, must deal a fatal blow to the system of which they are the principal, if not only, basis.

ii. It is necessary to forewarn the student, that the terminology of Kant is not a little bewildering; and that, owing to three causes. (*a*) He uses terms, already familiar to such as are acquainted with the Peripatetic philosophy, in a sense altogether new. Thus, for instance, by *Transcendental* he understands that which 'oversteps the limits of all experience[1];' whereas heretofore it had been taken to represent those cognitions, with their objects, which enter into all the Categories, (for the most part), and go beyond, or *transcend* them. *Perception* he would seem to employ as exclusively representative of sensile perceptions. He calls it 'empirical consciousness of the intuition[2].' *The internal sense*, which in the old School was a term reserved for the sensile faculty in its capacity for receiving impressions caused by internal modifications of our own bodies, (such as, those of hunger, thirst, pain, &c.), Kant identifies with reflex consciousness. Yet the former is a faculty which we possess in common with the brutes; the latter is purely intellectual. Again:

[1] *Critique of Pure Reason, Transcendental Dialectic, Book I, Sect. 2 (Translation by Meiklejohn, p. 229).*

[2] *Ibidem, Transcendental Logic, Chap. I, § 22, p. 98.*

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Imagination had hitherto been accepted as the memory (so to say) of the senses,—a lower, or animal, faculty of the soul; Kant describes it to be 'an operation of the understanding on sensibility[1].' Similarly, *Idea* in the old Philosophy is used either generically for every intellectual act, whether of simple Apprehension, Judgment, or Reasoning; or specifically, for an act of simple Apprehension. Kant exclusively reserves it for 'a necessary conception of reason[2].' *Intuition* once stood for the cognition of truths immediately evident; Kant uses the term as equivalent to sensile perception. Lastly, (not to extend the enumeration), by *Objective* and *Object* Kant understands the modifications of the external or internal sense and the corresponding perceptions, as objectively presented to the intellect. The difference, therefore, between the objective and the subjective is purely formal, founded on a certain psychological relation. (*b*) He not unfrequently either introduces, or adopts, new terms in the place of others which previously had been universally accepted. Thus,—borrowing from Leibnitz,—he calls direct consciousness, *Apperception*. Again: We have *Transcendental Schemata* of the pure conceptions of the understanding, which function as intermediaries between the Kantian Categories, (a most unfortunate transfer of an Aristotelian title to that which is most divergent from its primitive signification), and phenomena, or sensile perceptions. Once more: There are certain *Antinomies*, as Kant calls them,—i.e. certain dilemmas (so to say) wherein the apparent arguments that demonstrate each member of the dilemma and are destructive of its opposite seem to be equally conclusive. Now, it may undoubtedly be at times convenient and even necessary to add new terms to our philosophical dictionary; but it should be done very sparingly, and only where there is an urgent need. Kant revels in them; and his example has been too closely followed by our modern writers on philosophy. (*c*) There is a considerable ambiguity, to say the least, in the use of many of these terms, which makes it difficult to ascertain the precise meaning of the author. One notable instance will suffice, which is to be found in Kant's employment of the word, *Intuition*. Kant, as has been already noticed, identifies it with sensile perception. 'All our intuition,' he remarks, 'is nothing but the representation of phaenomena[3].' But, further: According to his showing, intuitions are either

[1] *Critique of Pure Reason, Transcendental Logic, Chap. I*, § 20, *p.* 93.
[2] *Ibidem, Transcendental Dialectic, B. I*, § 2, *p.* 228. [3] *Ibidem, p.* 35.

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empirical or pure. The latter are two, viz. time and space. 'These,' he tells us, 'belong to pure intuition, which exists *à priori* in the mind, as a mere form of sensibility, and without any real object of the senses or any sensation[1].' Yet we are assured only a page back that 'an intuition can take place only in so far as the object is given to us[2].' How, then, can time and space be intuitions? So, in another place we are informed that 'Space is a necessary representation *à priori*; (of what?), 'which serves for the foundation of all external intuitions[3].' Further on: 'Space is nothing else than *the form* of all phaenomena of the external sense, that is, the *subjective condition* of the sensibility, under which alone external intuition is possible[4].' 'Time is a necessary representation, lying at the foundation of all our intuitions[5],'—therefore, at the foundation of itself and of space. It is also a presupposition[6];' 'a pure form of the sensuous intuition[7],'—'a condition *à priori* of all phaenomena[8].' 'Space and Time . . . are merely subjective conditions of all our intuitions[9];' therefore, they are self-conditioning and conditioned. Then, again: 'Time and space are two sources of knowledge, from which, *à priori*, various synthetical cognitions can be drawn[10],'—'Principles of knowledge *à priori*[11].' Now, it is hard to understand how subjective forms, which are prior to all experience or sensile perception and are conditions, (*forms* are not usually identified with *conditions* or with *foundations* either), of the possibility of these latter, can become intuitions which 'with us never can be other than sensuous,' as containing 'only the mode in which we are affected by objects[12].' Nor is it less perplexing, unless our terminology is at fault, to reconcile the supposed fact of time and space being *Intuitions*, *Representations*, *Sources of knowledge*, *Principles*, with the other supposed fact that they are only *Modes*, *Forms of sensibility and sensation*, *à priori* and subjective *Conditions*[13]. Nor is this ambiguity or indistinctness confined to the mere terminology; for it extends to eminently important points of Kant's theory. Take, for instance, the question touching the really objective existence of an external world. For what concerns Kant's treatment of this

[1] *Critique of Pure Reason, Transcendental Dialectic, B. I, § 2, p. 22.*
[2] *p. 21.* [3] *p. 24.* [4] *p. 26.* The Italics are not Kant's. [5] *p. 28.* [6] *p. 28.*
[7] *p. 29.* [8] *p. 31.* [9] *p. 40.* [10] *p. 33.* [11] *p. 23.* [12] *pp. 45, 46.*
[13] It is instructive to know that both Locke and Hume are chargeable, and charged, with these ambiguities, which have been characterized more sternly. See *MM. Green and Grosse's Introduction to Hume's Treatise on human nature*, particularly *nn.* 12–14, *and* 237, 238.

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subject by the help of a peculiar meaning attached to the words, *Object*, *Objective*, we will content ourselves with the certainly unsuspected authority of Professor Caird. 'This Kantian language,' he remarks, 'is liable to be misunderstood, if we do not carefully observe the double force of the word "object." When Kant says that "through sensibility objects are given to us," he does not mean that they are given to us *as* objects. He only means that there are mental modifications produced in us, by synthesis of which the understanding can determine an object. But he thinks of the manifold of sense as the result of an object, a thing in itself, affecting the sensibility; and on the other hand, he treats the object, which the understanding determines through synthesis of the manifold given in sense, as identical with, or, at any rate, phenomenal of, the object that affects sense. Without considering at present how far he is justified in this mode of conception, it may be observed that his meaning here would have been less ambiguous if he had simply said that there is a "manifold" given in sense, which the synthesis of the understanding enables us to determine as objective. For when Kant says that "through understanding objects are thought," he means "thought *as* objects[1]."' Again, as touching the difference between analytical and synthetical Judgments, which, in the Professor's judgment, forbids that close affinity between the two that the theory of Kant would seem to postulate, Mr. Caird animadverts as follows: 'If there be any truth in the view taken in the last chapter of the difference between the so-called analytic or formal, and the synthetic or real judgment, Kant's attempt to make the former a stepping-stone to the latter, or to find any kind of identity in the two processes, must lead to confusion and even contradiction. . . . The key to this strange confusion of things essentially different will easily be found, if we remember that Kant always starts with the common opposition of perception and conception, as particular and general, but gradually as he goes on substitutes for it his own new sense of the terms, according to which perception must be taken to mean unconnected, "manifold," and conception to mean "binding or synthetic principle[2]."' Once more: Referring again to Kant's ambiguous use of the word, *Object*, the Professor expresses himself still more plainly. 'Just as he (Kant) allows himself to use the word synthesis, at one time for the function of sense, and at

[1] *A critical account of the Philosophy of Kant, Part II, Chap. V, pp.* 277, 278.
[2] *Ibidem, Ch. VII, pp.* 319, 320.

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another time for the function of understanding: so it is with the word "object." It seems to be employed to designate the element which, on any occasion, is regarded as wanting in order to complete the idea of experience. Hence the puzzling logomachy that arises when we bring Kant's thoughts and expressions together. The categories, which are conceptions of objects in general, are declared to be referred to objects only through perception, while it is just these very conceptions which make us conceive perceptions as objective, i.e. as representative of a reality more permanent than themselves. Thus it is said *both* that perceptions apart from the conceptions of the understanding have no objective validity or reference to objects, and that the conceptions only refer to objects through the perceptions[1].' No one, who is at all conversant with the Kantian philosophy, can fail to see that the points on which Professor Caird has animadverted in the above passages are of no secondary importance; and few will accuse the critic of a prejudice against the illustrious subject of his criticism.

And now for so much of the Kantian theory as will enable the reader to follow the argument, and understand the gist, of the next Proposition. Kant seems to have accepted the more prominent and fundamental conclusions of Hume. He admits that human knowledge is based exclusively on sensile impressions, and that it cannot go beyond *experience*, i.e. cognition by means of conjoined sensile impressions (*perceptions*). He further admits that these sensile perceptions are of mere phenomena; and in no wise reveal the nature of the thing represented, (if there be any external reality represented), as it is in itself. They are not, therefore, revelations to us of an external and really objective world; but purely subjective modifications, however caused. Again: He agrees that these sensile impressions, considered in and by themselves, are a mere succession of independent and evanescent sensations, having no principle of cohesion or unity, or germ of referribility to a subject in which the phenomena they represent, or are, may be rooted. Further: He maintains that the understanding can never gain increase of knowledge by abstraction or analysis of its own pure conceptions; though it may acquire greater clearness. All such increase is derived from the *synthesis* of the conceptions of the understanding with *the manifold* of sensile impressions. Again: The faculty of the understanding is never, according to him, intuitive; intuition is limited

[1] *A Critical Account of the Philosophy of Kant, Part II, Ch. VII, p.* 326.

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to the external and internal sense. The internal sense, (i.e. consciousness), like the external, intues only phenomena; and cannot perceive the object (i.e. the soul), as it is in itself. Moreover, since sensile impression is the primordial reason of our mental and, therefore, generally of all psychical acts, internal is dependent on, and subsidiary to, external experience; so that consciousness of our internal modifications and, consequently, reflex consciousness of self, are only possible in their relation to antecedent sensile perceptions or, at the least, modifications. Once more: The pure conceptions of reason or, in the language of the School, *à priori* demonstrations, are empty and illusive. Kant, accordingly, rejects all demonstrative proofs, (as others would call them), of the existence of God, of the spirituality and immortality of the human soul, and of free-will.

In the face of concessions so liberal to the scepticism of Hume, what possible foundation can Kant discover, whereupon to construct the certainty of human knowledge, and thus to save philosophy from a universal doubt that has bound thought hand and foot in its very cradle? An answer to this question conducts us to an analysis of Kant's theory. The subject, upon which we are about to enter, is more than usually abstruse. Add to this, the constant ambiguities of which complaint has been made, the novel terminology which cannot fail of adding considerably to the student's perplexity. Perhaps, therefore, it will be more profitable to throw the promised analysis into a concrete form, eschewing, so far as may be, the use of terms that are generally unfamiliar. Before commencing, however, it seems advisable to interpose a remark. While Kant boasts that by his theory he firmly establishes scientific certainty; yet he so far indorses the pet view of Hume as to acknowledge that the primary object of philosophy according to the critical method is, to define the limits of human science and to curb the excesses of metaphysical speculation by confining it to the sphere of experience. These are his words: 'What is the real value of this system of metaphysics, purified by criticism, and thereby reduced to a permanent condition? A cursory view of the present work will lead to the supposition that its use is merely *negative*, that it only serves to warn us against venturing, with speculative reason, beyond the limits of experience. This is, in fact, its primary use. But this, at once, assumes a *positive* value, when we observe that the principles with which speculative reason endeavours to transcend its limits, lead inevitably,

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not to the *extension*, but to the *contraction* of the use of reason, inasmuch as they threaten to extend the limits of sensibility, which is their proper sphere, over the entire realm of thought, and thus to supplant the pure (practical) use of reason;' (i.e. the use of reason within the sphere of ethics). 'So far, then, as this criticism is occupied in confining speculative reason within its proper bounds, it is only negative; but, inasmuch as it thereby, at the same time, removes an obstacle which impedes and even threatens to destroy the use of practical reason, it possesses a positive and very important value[1].' What this *practical use of reason may be*, it boots not now to inquire; suffice it here to say, that it excludes from the field of its exercise the Kantian Categories, i.e. all the primary forms of speculative cognition.

Let us now enter on the promised analysis. Certain sensations awaken the faculty of the external sense. For instance, I perceive or feel a sensation of *red*, another of some *sweet smell*, another of a *pricking pain*, another of *stickiness*. Let it be supposed that these sensations come upon me altogether. *As* simple sensations, they are subjective modifications, (that is, changes in *me*),—each independent of the other,—so many isolated, unconnected facts. Let it be further supposed, that, after some hours interval, I am again subjected to sensile impressions of *red*, *sweet smell*, *pricking pain*, and *stickiness*. Long before this second batch of sensations has arisen within me, the first batch has already passed away. *As* sensations merely, this second batch is wholly unconnected with the former and, like the former, each sensation is unconnected with the rest. Such batches of sensile impressions may be indefinitely multiplied, as time goes on; invariably with the same result. No one of them is connected with the other; nor are the sensations that compose one batch connected with those of any other batch, while they are independent one of another. (The word, *batch*, is preferable to *series* or even *collection*, because these latter terms seem to connote some objective relation, if only of order). So far, then, there is nothing but an unordered *manifold*,—a simple *multiplicity*,—waves of sensations, each limited to itself, each disappearing before its successor has arisen. There is no order, no relation, no cohesion, no referribility. Out of such fleeting, chaotic elements,—if unassisted, uninformed,—any genesis of knowledge would be impossible.

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[1] *Preface to the second Edition of the Critique of Pure Reason, pp.* xxxii, xxxiii.

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But here, at the very outset, there is an observable factor in my sensations as just described. In fact, unless account were made of it, one could not attempt the description. That factor is the concept of *time*. For synchronousness, no less than succession, means time. This concept, or form, is necessarily included in every sensile perception, i.e. in every conscious, every apprehended sensation. Hence, no sooner does the mind perceive any one of these sensile impressions, than its perception is invariably and necessarily determined by the form of time, i.e. the sensile impression is perceived as being in some definite point of time. But time cannot be derived from the sensations themselves; for these are unrelated units, and are or are not. The form of time, on the contrary, introduces a relation and initial order into the phenomena of sense. Since, then, it cannot originate with sense, it must be *à priori* to sense,—a form imposed by the mind on sensile perception. It therefore has its origin in the thinking subject; nor is there any reason for supposing that it finds anything corresponding with itself outside the understanding. Consequently, it is purely subjective. But again: Since these sensations are for the present considered only as modifications of the thinking or sentient subject, i.e. of myself; they, so far, present themselves as phenomena of the internal sense. As such, they are informed by time; for my time, so to speak, is theirs. 'For time cannot be any determination of outward phaenomena. It has to do neither with shape nor position; on the contrary, it determines the relation of representations in our internal state[1].' Internal phenomena, intuitions of the internal sense, (v.g. sorrow, acts of the will, thoughts, motions of passion, pain, &c.), come *immediately* under the determination of time; external phenomena, intuitions of the external sense, only mediately and in their character of internal modifications.

The expression which has frequently recurred, *external sense*, suggests an important question. What is meant by *external* sense, *external* phenomena, intuitions of the *external* sense? If they are merely subjective modifications,—affections in *me*,—in what sense can they be called external? Why are my sensations of *red, sweet smell, pricking pain, stickiness*, considered as external, more than my *sorrow* at the death of a relative or my *feeling of hunger*? It is, because the former class of sensations or sensile perceptions are

[1] *Critique of Pure Reason, p.* 30.

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determined by the form of *space*. In my aforesaid sensations of *red, sweet smell, stickiness*, I instinctively localize them, project them outside me, and, in many instances, give them shape; as, e.g. when I experience the *sense of seeing and touching a surface*. But the mere sensations themselves cannot supply the concept of space; for, considered in themselves, they are nothing but modifications of myself. Therefore, the form of space is impressed by the understanding, in its act of sensuous intuition, on phenomena which for that reason are called external. Thus, then, space is a subjective determination of the *external* sense; but it does not affect the internal. No one locates in space or gives shape or position to a thought, a wish, a sorrow.

Two forms, then, have been discovered, which the understanding imposes on sensile perceptions, viz. the forms of time and space. To sum up in the words of Kant: 'Time is the formal condition *à priori* of all phaenomena whatsoever. Space, as the pure form of external intuition, is limited as a condition *à priori* to external phaenomena alone. On the other hand, because all representations, whether they have or have not external things for their objects, still in themselves, as determinations of the mind, belong to our internal state; and because this internal state is subject to the formal condition of the internal intuition, that is, to time,—time is a condition *à priori* of all phaenomena whatsoever,—the *immediate* condition of all internal, and thereby the *mediate* condition of all external phaenomena. If I can say *à priori*, "all outward phaenomena are in space, and determined *à priori* according to the relations of space," I can also, from the principle of the internal sense, affirm universally, "all phaenomena in general, that is, all objects of the senses, are in time, and stand necessarily in relations of time[1]."' These forms, then, are *à priori* to all experience,—necessary laws imposed by the understanding on sensile perception. They are, therefore, (to repeat) purely subjective; and are in no wise derived from the possible, though unknown, object or cause of sensation. They condition the phenomena of sense, as two mental moulds in which sensile perceptions are necessarily cast, after the manner that Kant has just explained. Furthermore: They produce in the phenomena of sense the primordial elements of order, relation, union,—order of simultaneousness, succession,—

[1] *Critique of Pure Reason, pp.* 30, 31.

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order of contiguity, nearness, distance, configuration, whence distinctness together with a crude mutual referribility. There is one important element in this theory still wanting. Whence have these forms arisen? How can it be demonstrated,—in opposition to the doctrine of the School,—that these concepts are not representative of an objective reality and derived from the real objects of sensile perception, that they are *à priori* forms of the mind? Kant has attempted no answer to these questions.

One other point remains to be settled, before proceeding a step further in our analysis. By what process is it that passing sensations can acquire a sort of subjective permanence? In other words, when a sensation is once dead and gone, how is it resuscitated? Evidently, something of the sort is required; otherwise, it would be impossible to determine sensations according to order of succession, or to compare them. Moreover, their collective presentment before the understanding is requisite for the synthesis of experience; that is, in order to be able to draw inductions from a successive series of sensile phenomena. This requirement is satisfied by the reproductive imagination; which, as being the memory of the senses, has the power of recalling at will sensations that are past and gone.

As yet,—to resume our analysis,—there is no room for the possibility of formal truth or of falsity and error. Neither is there room for knowledge of the simplest kind. It will be granted, that the sensations of *red*, *sweet smell*, &c. are *materially* true; for there is no doubting the fact that the sensation of *red* is a sensation of *red*. But formal truth is limited to a Judgment, and a Judgment presupposes a subject and predicate,—i.e. two terms which, though distinct, have a mutual order, connection, referribility. Such a postulate cannot be satisfied in the instance of simple, isolated sensations. The intuitions of sense are conditioned, indeed, by time and, if of the external sense, by space; but as yet they are subject to no order of collection or principle of combination. They are so many separate events in time or, if so be, phenomena in space with figure and position. They are localized; but they are isolated, purely manifold. To pursue the old illustration:—The *red*, *sweet smell*, *pricking pain*, *stickiness of feel*, are, say, now present,—outside of me, close to me,—contiguous, if you will, to each other; but the *red* is red by itself, the *sweet smell* is sweet smell by itself, the *pricking pain* is a pricking pain by itself, the *stickiness*

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is a stickiness by itself. They have nothing in common with each other, but present themselves as so many independent modifications of *me*.

But, somehow or other, my understanding judges that *this red, this sweet smelling, this prickly, this sticky*, is *a moss-rose*. Here there is a gigantic leap. The sensations are referred to an object of which they are the supposed index. They are grouped together, united in one, by conceived relation to a thing that they are, in some way or other, supposed to reveal. A synthesis of the manifold of sense has been effected. The thing becomes subject of a Judgment, in which the several sensile phenomena serve for predicate. Thus groups of sensations are gathered round their respective common centres,—each group is discerned from the rest,—and the sensations that constitute a group exhibit mutual connection and union. Those groups, again, may be reduced by further synthesis to a higher unity, by the conceived mutual relation, or referribility, of one group to another; and in this way the understanding provides itself with universals. Thus experience and, by experience, knowledge are possible.

Now, the vital question awaits solution: How is this synthesis effected? According to the philosopher of whose doctrine the analysis is now attempted, it cannot be derived from the perceptions of sense. For, first of all, they have no exordial principle of union in themselves; and, in the second place, either they have no real object or, if there be such an object, they are not representative of it. Wherefore, so far as the human mind is concerned, they are mere subjective modifications. Neither can it be derived *à posteriori* from experience; not only because experience presupposes the synthesis, but likewise because experience could never give to Judgments of its creation universality and necessity. On the other hand, it cannot be founded in the object; for of the object, (if there really be one), as it is in itself, we know, and can know, absolutely nothing. It remains, therefore, that this synthesis should be a creation of the understanding, and that it should be effected—for reasons sufficiently evident from the previous analysis of time and space—under the guidance of *à priori* forms, or concepts that are prior to all experience. Such forms, according to Kant, are the twelve CATEGORIES, (a name most unhappily borrowed from the Aristotelian philosophy), which he has tabulated, as follows. They are derived from the ordinary

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logical division of Judgments; may it not be said, all but transcribed?

QUANTITY[1].

Universal.	**Particular.**	**Singular.**
i. *Unity.*	ii. *Plurality.*	iii. *Totality.*

QUALITY.

Affirmative.	**Negative.**	**Infinite[2].**
iv. *Reality.*	v. *Negation.*	vi. *Limitation.*

RELATION.

Categorical.	**Hypothetical.**	**Disjunctive.**
vii. *Of Inherence and Subsistence.*	viii. *Of Causality and Dependence.*	ix. *Of Community.*

MODALITY.

Impossible.	**Contingent.**	**Necessary.**
x. *Possibility.* / *Impossibility.*	xi. *Existence.* / *Non-Existence.*	xii. *Necessity.* / *Contingence.*

These forms or conceptions again, like those of time and space, are purely subjective. They are signets of the understanding, which this latter impresses on the perceptions of sense, as upon wax, in order to shape and mould them for the purpose of cognition. It is by means of them alone that the understanding can render the manifold of sensile phenomena conceivable,—can, in other words, think an object of Kantian intuition. As these forms are innate in the understanding and *à priori* to all experience or sensile perception, they become the parents of a universality and necessity which satisfy the exigencies of human knowledge, and afford a sufficient basis for the certainty of science.

In order to complete the summary of this the most important element in Kant's theory, let thus much be subjoined. These so-called Categories,—these primary forms, or concepts, or determining Principles, of the understanding,—are universals of the

[1] In this Table the Categories of Kant are numbered, and distinguished by italics.
[2] See Logic; the *nomen infinitum* and *particula infinitans.*

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widest periphery. Consequently, they seem to require determination by something intermediary, in order that they may be proximately capable of application to the perceptions of sense. Such are the *Schemata*, as Kant denominates them; which are, as it were, subsumptions under the Categories, drawn by the imagination according to the sensile form of time. 'It is quite clear,' remarks Kant, 'that there must be some third thing' (other, i.e. than the Categories on the one hand and the sensile perceptions on the other, which are quite heterogeneous), 'which on the one side is homogeneous with the category, and with the phaenomenon on the other, and so makes the application of the former to the latter possible. This mediating representation must be pure (without any empirical content), and yet must on the one side be *intellectual*, on the other *sensuous*. Such a representation is the *transcendental schema*. . . . An application of the category to phaenomena becomes possible by means of the transcendental determination of time, which, as the schema of the conceptions of the understanding, mediates the subsumption of the latter under the former. . . . The Schema is, in itself, always a mere product of the imagination[1];' which, as Kant tells us, is 'the faculty of representing an object even without its presence in intuition[2].' It seems to hold the same place in the Kantian system, that in the Peripatetic philosophy is assigned to the faculties of generalization and abstraction; or, as Professor Caird puts it, 'It is, in short, a faculty of determining sense *à priori* according to the categories[3].' This, however, must be understood of what is called, in Kantian phraseology, the *productive*, not the *reproductive* imagination.

In order to render this important element in the Kantian theory more intelligible to the reader, an example of one of these *Schemata* shall be given.

There is a simple *manifold*, as we have seen, of the internal sense and, in consequence, of all empirical representations. How is it possible to reduce this empiric *manifold* under the Category of *unity*, which only synthesizes the manifold in general? A mediator, so to speak, is wanted between the two, which shall be homogeneous with both terms; and it is found in the *Schema* or subsumption of time. For time is homogeneous with the Category, inasmuch as it is an *à priori* universal; and it is homogeneous with

[1] *Critique of Pure Reason*, *pp.* 107–109, *E. T.* [2] *Ibidem*, *p.* 93, *E. T.*
[3] *Caird's Philosophy of Kant*, *Part II*, *Ch. VIII*, *p.* 361.

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the empirical representations, forasmuch as time is contained in every empirical representation of the manifold. 'Thus an application of the category to phaenomena becomes possible, by means of the transcendental determination of time, which, as the schema of the conceptions of the understanding, mediates' (acts as medium for) 'the subsumption of the latter under the former[1].'

Here a question naturally suggests itself, which brings the Kantian theory face to face with the doctrine of the School touching demonstration and the value of science properly so called, while introducing us directly to the subject of the present Chapter. According to the philosopher of Königsberg, the Categories, (or *à priori* conceptions of the understanding), like the aesthetic forms of time and space, only cover the ground of possible experience, i.e. of the cognitions of sensible perception. Here their value begins and ends. They have no cogency in the case of supposed *noumena*, i.e. of the cognition of things as they are in themselves. 'But, after all,' says Kant, 'the possibility of such noumena is quite incomprehensible, and beyond the sphere of phaenomena, all is for us a mere void[2].' 'The understanding is competent to effect nothing *à priori*, except the anticipation of the form of a possible experience in general, and, as that which is not phaenomenon cannot be an object of experience, it can never overstep the limits of sensibility, within which alone objects are presented to us[3].' Hence it follows that all *à priori* demonstration, as understood by the School, is a useless piece of child's play. Further: According to Kant, mere analysis of concepts adds nothing to knowledge; it can only impart greater clearness and distinctness to cognition. There can be no increase of knowledge, consequently no progress of science, save by synthesis. It is by the synthetical process that the manifold of sense is united under the Categories by means of the *Schemata*, and perfected in the permanent unity of *apperception* (i.e. of the direct consciousness). Hence arises a difficulty of no little moment. If all knowledge be the result of synthesis, and if (as had been heretofore imagined) synthetical Judgments are essentially particular and contingent, it seems to follow that there can be neither necessity nor universality of cognition,—therefore, no science,—and no certainty beyond that physical certainty which belongs to the sphere of facts. In such case, it could

[1] *Critique of Pure Reason, B. II, Ch. I, p.* 108, *E. T.*
[2] *Ibidem, p.* 187. [3] *Ibidem, p.* 183.

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not be that anything like physical law should be discoverable by us; because physical law not only determines past and present phenomena, but likewise conditions the future, (that which Kant calls *possible experience*). Kant admits that, in analytical Judgments, universality and necessity are essential properties, because such Judgments are based on the supreme logical principles of identity and contradiction. But, as he confesses, 'in synthetical Judgments, I must go beyond the given conception, in order to cogitate, in relation with it, something quite different from that which was cogitated in it, a relation which is consequently never one either of identity or contradiction, and by means of which the truth or error of the judgment cannot be discerned merely from the judgment itself[1].' How, then, is it possible that the synthesis should surpass the limits of *actual experience*, so as to generate necessity and universality under any shape? Kant meets the difficulty by introducing his synthetical *à priori* Judgments. Wherefore, his answer to it is, that the objection holds good as touching synthetical *à posteriori* Judgments, but is nerveless before such as are *à priori*. If one is tempted by a pardonable curiosity to inquire, how a synthetical Judgment can be *à priori*, Kant replies that the elements of the synthesis are *à priori* and, therefore, the synthesis itself. This he explains. Three elements, he urges, are necessary and sufficient for a Judgment of this nature; to wit, a category of the understanding, the synthesis of sensile perceptions under the form of time, (the form of the internal sense), and thirdly, the unity of *apperception*. (This last might as well have been omitted, since direct consciousness accompanies every psychical act and, consequently, every Judgment of the mind, as well particular and contingent as universal and necessary.) But the three aforesaid elements are *à priori*; therefore, as it apparently seems to be inferred, the *nexus* as expressed in the logical *copula*. Should it be further objected, that the above declaration or argument (whatever weight it may be supposed to have in proving the abstract possibility of such Judgments) does not touch their objective validity; Kant has his answer ready. Their objective validity (according to his special meaning of the word *objective* in this connection) depends upon *the possibility of experience*. This proposition he endeavours to prove in such wise. To the possi-

[1] *Critique of Pure Reason*, p. 117.

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bility of human knowledge it is necessary that the phenomena of sense should be synthetically united in relation to conceptions of their object in general. Without this they would be mere batches of unconnected sensations, void of all order; and experience would be impossible. 'Experience has therefore for a foundation, *à priori* principles of its form, that is to say, general rules of unity in the synthesis of phaenomena, the objective reality of which rules, as necessary conditions—even of the possibility of experience—can always be shown in experience. But apart from this relation, *à priori* synthetical propositions are absolutely impossible, because they have no third term, that is, no pure object, in which the synthetical unity can exhibit the objective reality of its conceptions[1].' The meaning of Kant would seem to be this. If there were no Kantian Categories,—no *à priori* forms of the understanding,—it would be impossible to refer the manifold phenomena of sense, even though understood as united in perception according to the sensile forms of time and space, to a common conception or cognition, wherein they may be thought as objectively one. The very possibility of experience, therefore, presupposes the Categories, their intermediary *Schemata*, and an admitted synthesis between these and the phenomena of sense.

The doctrine here exposed lies at the root of Kant's peculiar system of ideology. For, according to him, there is no cognition, which is effective of science, apart from possible experience. Analytical Judgments have a logical value; but count for nothing in the progress of knowledge. Hence, all science must be based on synthetical *à priori* Judgments. 'We cannot think any object,' says Kant, 'except by means of the categories; we cannot cognize any thought except by means of intuitions corresponding to these conceptions. Now all our intuitions are sensuous, and our cognition, in so far as the object of it is given, is empirical. But empirical cognition is experience; consequently no *à priori cognition* is possible for us, except of objects of possible *experience*[2];' that is to say, of objects of sensuous intuitions as cognized by the understanding. Consequently, the progress and certainty of human knowledge absolutely depend, according to Kant, on these synthetical *à priori* Judgments. Eliminate them,—destroy their pretension to be possible forms of thought;—Kant's critique leaves the scepticism of Hume untouched.

[1] *Critique of Pure Reason, pp.* 118, 119. [2] *Ibidem, p.* 101.

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There is one note that it is but just we should subjoin to the above analysis. It must not be imagined, because Kant has considered these elements of cognition apart, (as the nature of his inquiry demanded), that he accounts them to be practically separable. 'Without the sensuous faculty,' he reminds us, 'no object would be given to us, and without the understanding no object would be thought. Thoughts without content are void; intuitions without conceptions, blind[1].' After a somewhat similar manner, the *transcendental* unity of apperception is necessary to the synthesis of experience; but the consciousness of self is only possible in and through the synthesis of the manifold by the understanding, i.e. in cognition of experience.

Here the analysis closes. The writer has taken pains, amid the many difficulties to which allusion has been already made, to give an accurate summary of the Kantian theory. If he should have failed in conveying the author's mind on this or the other point, he can say at least that the mistake is not intentional. It now only remains, before entering upon the promised discussion touching the aforesaid synthetical *à priori* Judgments, that an assay be made to determine the value of the theory in question.

One cannot but see that the *Critique* of Kant utterly fails to bridge over the chasm which previous scepticism had made between the subjective and the objective,—between thought and reality,—between human intelligence and that external world whose objective existence is assured to us by the general voice of mankind in all ages, by the safe instincts of common sense, and by that cogent argument of a practical necessity, which scatters to the winds all mere dreams of the study however geometrical in construction. The seeming objectivity, which is from time to time paraded before us, is an objectivity of mere intellectual creation,—nothing else than a *subjective* objectivity, such as the mind constructs for itself in every psychologically reflex idea, wherein a prior concept, *as* concept, or some other psychical act, becomes the object of mental conception. The *Critique*, therefore, attempts to solve the critically insoluble problem, by ignoring, or rather effacing, one of the two essential terms,—banishing into the unknown the true object of human thought,—and substituting, in its place, an ingenious combination of psychical phenomena that have no meaning beyond the

[1] *Critique of Pure Reason*, p. 46.

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sphere of the *Ego*. Out of such elements it is impossible to extract anything beyond a subjective certainty and evidence. But a purely subjective evidence and certainty are arbitrary and, as a consequence, no true evidence or certainty at all. It may, indeed, be urged in opposition to the above conclusion, that we are in quest of a solid foundation for the certainty of human knowledge, for the purpose of removing all sceptical impediments to its progress. The problem is necessarily a subjective one. It does not make account of possible beings whose intellectual acts, unlike those of man, are intuitive. The perceptions of sense are intuitive; but then, they are not representative. Hence, if there be a universe, visible and invisible, outside ourselves; man has no faculty which can put him *en rapport* with it. We must take human nature as we find it; and to it such a universe must remain an unknown and unknowable country. This once granted, it may nevertheless still remain within our power to discover a legitimate foundation for subjective certainty, and so to secure the only knowledge that is possible to man. To this plea let the following be said by way of answer. Impediments to knowledge created by one form of scepticism cannot be removed by scepticism under another guise. Again: It is true that the problem is immediately subjective; because certainty is immediately subjective. But it is, nevertheless, though mediately yet primarily objective; because subjective certainty, if genuine, results from evidence which is immediately objective. Furthermore, we deny that sensile perception is intuitive, and we confidently affirm that the understanding is intuitive; while it must be added that the motives by which Kant would persuade us to the contrary are unequal to the weight which he has laid upon their shoulders. It naturally follows that a categorical denial must be given to the assumption that the universe, as well visible as invisible, must remain unknown and unknowable to human thought. But suppose, for the sake of argument, that all these Kantian postulates are true,—assume, for the moment, that the picture given of our mental poverty is a faithful one; it still remains to be seen whether the subjective certainty, which Kant professes to establish, rests upon a surer and more logical basis than that which had been already provided by the dogmatic philosophy, as they term it. Without attempting an elaborate comparison of the two, which would be out of place, it may be allowed to propose the following questions: Does Kant demonstratively prove his theory as to subjective

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certainty? Is it clear of all hypothesis and assumption? Does it go straight from axioms, or self-evident truths, to conclusion? In order to arrive at a satisfactory answer, it will be necessary to return on our path.

The fact is beyond all doubt that, according to Kant, nothing truly objective is revealed by either the external sense or by the reflex consciousness, (which he terms the internal sense). Equally in both cases, there are certain subjective modifications which are representative of nothing. These modifications are pure appearances,—phenomena. They appear themselves; but they do not make to appear (*φαίνονται*). In themselves, therefore, they are isolated feelings, or sensile affections, or psychical modifications, without a meaning. Yet, out of these unpromising materials all human knowledge is constructed; while a frontier is established, beyond which the human mind can obtain no passport.

True, it may be replied; but in this respect the Kantian system fares no worse than that of the School. For this latter teaches that sensile impressions are only subjective modifications which do not reveal the natures of things. Both systems teach in common, that it is the intellect which transforms these sensile perceptions into concepts or cognitions. For answer, it must be denied that the philosophy of the School holds sensile impressions to be merely, or exclusively, subjective modifications; for it maintains that they are in one way or other representative of certain accidents of bodies, although not of their essential nature. Then, again, it does not teach that sensile impressions are the object of the understanding; but only the medium by means of which the bodily substance or nature (the mind's real object) is made present to that faculty. The understanding intues the nature. Lastly, as to the *internal sense,* though the soul is only revealed to its own reflex consciousness in and by its acts, (because nothing is cognizable save so far forth as it is in act); yet those acts are spiritual and vital and, by virtue of their *immediate* presence to thought, are eminently representative of their subject. Setting aside, however, these differences, it may be granted that in both these systems sensile perceptions are *somehow or other* transformed by the intellect; but how? Let the question be restricted to Kant's system. How then does this philosopher explain the action of the intellect on sensile impressions? First of all, as imagination, it subjects them to certain *à priori* forms,—to wit, those of time and space,—which are purely sub-

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jective. Therefore, they are concepts of the mind purely indigenous. Therefore, we have innate ideas. What proof is there of this? Furthermore: Whence came they? on what foundation of evidence do they rest? who or what is their author? All is hidden in darkness;—one of nature's mysteries. They may, then, for all we know, be mere arbitrary creations of the imagination; if so, what becomes of that legitimate certainty by which alone human knowledge becomes possible? But they impose their own necessity on thought. Well, and what of that, if they *causelessly* necessitate? And do they really necessitate thought in any way equal to the necessity, which sensile perception imposes on the understanding, of referring the phenomena of sense to real, external, bodily objects? Besides, can any one, however simple, be persuaded without sufficient demonstration, that time and space have no real root in the things that are external to us?

To resume:—So far, there is no transformation. But now the understanding intervenes with its supposed *Categories* and *Schemata*, by means of which sensile phenomena are synthesized into unity of cognition. But are these Categories representative in any way of objective reality? No; Kant is careful to remind us that they are nothing of the sort. They are pure *à priori* concepts of the mind. Nay, so anxious is the German philosopher to impress upon us the assumed fact of their unreality, that he calls them forms and conditions, as though void of all content. They are, therefore, wholly subjective; and cannot elevate sensile perception into representative conjunction with something real that is not itself. Is it, then, possible that the *Schemata* may be able to supply the deficiency? Certainly not; because these are merely determinations of the Categories according to the subjective form of the internal sense; and two subjectives cannot constitute an objective. The whole genesis of our concepts, therefore, from first to last, is the mere play of our subjectivity. But, it may be objected: This is precisely the point on which Kant insists. He is, in effect, the father of German idealism. And his principal object is, by his criticism, to circumscribe human knowledge within its just limits. True: And those limits are so remarkably narrow, that they painfully remind one of the old torture of the scavenger's daughter. But how does his theory save us from the scepticism of Hume? How can more weight be reasonably attributed to these so-called cognitions engendered by the aforesaid empty forms, than to the analytical

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Judgments of the pure understanding, which Kant agrees with Hume in denouncing as useless to the advancement of human knowledge? And if these Judgments are to be set aside as comparatively worthless, what are we to say to the Categories with their *Schemata?* But these latter rescue the perceptions of sense from their blindness. Be it so; but when they have gained eyesight, what do they see? And the sensile perceptions remove the void from the Categories, we are told; but what content do they supply? The Categories are subjective modifications; and their void is filled with other subjective modifications,—to wit, the phenomena of sense. In such elements can a sufficient foundation be discovered for the certainty of human knowledge? But we are again told, as in the instance of the sensile forms of time and space, that these Categories impose a necessity on human thought; so that without them nothing is even thinkable. Such necessity is revealed to us by experience. Therefore, we are compelled to invest them with a sort of objectivity. But the fact of this compulsion is purely phenomenal; therefore, the objectivity is exclusively subjective. Again: This necessity is a fact of experience; and, as being such, must have been determined by the Category of Necessity. But the Category cannot be revealed in its objective value by that on which it imposes its own impress; for this is to make the son generate his father. Then we naturally proceed to inquire into the genealogy of this Category, as of the others; and we are told that it is wrapt up in impenetrable mystery. But we are bound to accept the Categories and their necessity as a fact. Yes, as a fact, i.e. as concepts whose objective evidence is immediate and metaphysical and whose latent principles are self-evident analytical Judgments; but not as a blind autocracy that can offer no reason for its claims. What certitude, —even if the problem be limited (as in the given hypothesis it must be) to subjective certitude, that is to say, to the certitude of the thought as distinguished from that of the thing, or object, thought of,—can with any show of prudence be assigned to certain forms of thought whose very existence is an impenetrable mystery? Lastly, the necessity of these forms of thought,—nay, the very forms themselves,—can only have at the most a personal, or individual value; i.e. they can never transcend individual experience according to the Kantian system. In vain would you attempt to elevate them to the rank of universal and invariable conditions, or laws, of human thought. For to this end it must be certainly

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ascertained that the said conditions regulate, not our own individual concepts only, but those of mankind in general. Yet, how is this possible, if our sensile perceptions are not representative; seeing that, through the medium of these alone, can we become acquainted with the experience and conviction of other men? If my eyes in reading and my ears in hearing are representative of nothing external to myself, I am shut out from every possible means of ascertaining whether these forms and their necessity extend to others besides myself; if there be any others, about which I can have no certain knowledge. Wherefore, my knowledge, such as it is, will be mine only; not participable by another. For how can I even make an endeavour to communicate what I know to my fellow, (if such there be), except by awakening in him (if I can) unrepresentative sensations? And is this, after all, the promised escape from the scepticism of Hume?

It remains that we should determine the value of those synthetical *à priori* Judgments which constitute the basis of the Kantian system. Wherefore,

PROPOSITION CXXVII.

Synthetical *à priori* Judgments are impossible.

I. The human mind is unable to form a certain Judgment in the absence of any whatsoever motive of assent. But, in these synthetical *à priori* Judgments, the human mind is supposed to form a certain Judgment, (i.e. to judge with certainty), in the absence of any whatsoever motive of assent. Therefore, synthetical *à priori* Judgments are impossible.

The *Major* stands in no need of elaborate proof. The common sense of mankind intuitively perceives and individual experience strengthens the conviction that, whenever the understanding synthesizes (in an affirmative), or separates (in a negative Judgment), subject and predicate, its judicial act is motived. That the common sense of mankind bears witness to the truth of the above assertion, is sufficiently illustrated by the way in which men generally meet a categorical proposition let drop in conversation, when they do not see their way to accept it. Such expressions as, *What is your reason for asserting that?—But why, I should like to know?—I cannot accept that without proof,—On what authority do you make that*

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statement?—and others similar to these, plainly enough imply that, in the opinion of mankind, there can be no true and certain Judgment where there is no adequate accompanying motive. That each man's individual experience confirms the same truth, cannot be honestly called in question. For why is it that about so many questions we doubt or opine, and cannot bring ourselves to pronounce a decided Judgment? Is it not, that either no motives for assent are present to the mind or the motives on either side seem to us of equal weight, and then we doubt; or that, though motives appear to preponderate on one side, nevertheless there are motives of such gravity on the other as to exclude certainty and to justify us only in forming a more or less probable opinion? Why, moreover, is it that philosophers labour with painful thought to reduce scientific conclusions to first principles whose motive is their own immediate evidence; if it be not that the human mind cannot rest satisfied with any Judgment, unless the motives are projected in clearest certitude and necessary immediate relation?

The Minor requires more elaborate treatment. According to the received teaching of the School, (which has been more or less indorsed by all sane philosophies), the universal ultimate motive of every purely natural Judgment,—unless it be a mere prejudice and therefore unworthy of notice,—is its evidence, real or supposed. Now, there are three, and three only, kinds of evidence, as has been shown at length in an earlier Chapter of the present Book. For evidence is either metaphysical, physical, or moral. The first is the evidence of immutable essence. The second is the evidence of fact or experience. The last is the evidence of testimony or authority. The last two may be at once eliminated from the present discussion. For, as Kant himself is free to admit, the evidence of fact (in other words, experimental evidence) can never, at least by any virtue of its own, attain to that universality and necessity which the Judgments in question suppose, and which all science that is worthy of the name postulates. As for moral evidence, it is extrinsic and generates human faith indeed, but not scientific knowledge. Add to this, that neither of these last-mentioned species of evidence could motive an *à priori* Judgment. It is a contradiction in terms. It remains, then, to be seen whether these synthetical *à priori* Judgments can lay claim to anything like metaphysical evidence. But this is im-

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possible. For what is metaphysical evidence? It is the evidence which accompanies the essential constitution of Being. Accordingly, the predicate of the Judgment which it motives is of the essence of the subject, and is discoverable by analysis in the nature of that subject. But a Judgment of this kind is analytical. It is for this reason that analytical Judgments are somewhat inaccurately declared by some to repose for their logical validity, in so far as they are affirmative, on the Principle of identity; in that the object of both subject and predicate is essentially identical. But these Judgments of Kant are professedly synthetical. To throw this argument into another and briefer form: If the said synthetical *à priori* Judgments have any motive of assent, that motive must be either metaphysical or physical evidence, because evidence is the ultimate motive, or reason, of every Judgment. But they cannot lay claim to metaphysical evidence, because they are *synthetical;* and they cannot lay claim to physical evidence, because they are *à priori.*

Again: Kant acknowledges that the presence of his Categories and, therefore, of the *Schemata*, in the human mind, and their absolute rule over thought are a mystery. No reasonable account can be rendered of the one or the other. Yet these are the sole agents, so to speak, of the synthesis in question. But evidently this is tantamount to a confession that his synthetical *à priori* Judgments do not rest on any intelligible motive.

II. Those synthetical Judgments are impossible, (at least so far as the certainty and progress of human knowledge are concerned), whose synthesis involves either absurdity or contradiction and, if not absurd or contradictory, has no representative value. But such are the synthetical *à priori* Judgments of Kant.

There would seem to be no need of any declaration of *the Major*, save as regards the last clause; because it is manifest that no Judgment which involves contradiction or absurdity is logically admissible as a sure basis of human knowledge. But it does not so clearly appear why a mental Judgment, whose synthesis has no representative value, should be impossible. Nor, indeed, could such a proposition be maintained; for it would render impossible the most important of the pure forms of thought as given in logic. It is for this reason, and as specially applicable to this clause, that those words have been added to *the Major*, viz. *at least so far as the certainty and progress of human knowledge are concerned.* It might

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otherwise be expressed, that these Judgments, as unrepresentative, are *practically* impossible.

The *Minor*,—in which it is affirmed that the said Judgments of Kant are such, i.e. are *Judgments whose synthesis involves either absurdity or contradiction and, if not so, has no representative value*,—needs declaration and proof. In these synthetical *à priori* Judgments, then, the synthesis of predicate and subject must rely either on facts of experience, on purely mental action, or on arbitrary chance; for it is needless and almost unseemly to introduce into a question of purely rational philosophy the hypothesis of an immediate Divine intervention in the creation within us of such Judgments. Now, to attribute the judicial synthesis to arbitrary chance is an *absurdity*. To attribute the synthesis in *à priori* Judgments to experience is a *contradiction*. But what about the second hypothesis, to wit, that the synthesis relies on purely mental action? It has been already shown, that a mental synthesis without a motive (that is to say, a judicial synthesis) is impossible. But let that pass. Mental laws and mental action can lend no evidence to the *object;* and it is for this reason that Kant has denied to analytical Judgments their place in the advancement of human knowledge. But the judicial synthesis is an *intentional* (as logicians term it) reflex of the object; otherwise, it is nothing. For, if the universality and necessity which such Judgments exhibit are born only of the mind, they can only at the most illustrate the subject, but not the object; except so far forth as the object is identified, *ex parte rei*, with the subject. Wherefore, so far as science is concerned, (and by *science* is meant the certain cognition of *things*, i.e. of the objects, by their causes), they are entirely useless and, therefore, *practically impossible*. Again: According to Kant, (as we have already seen), the psychical facts of consciousness are empirical equally with the facts of sensation; and cannot, consequently, mount to the universality and necessity of *à priori* truths. But these Categories with their *Schemata* are psychical facts. Hence, they are contingent and particular cognitions. But how can particular and contingent cognitions communicate universality and necessity to their subordinates? *Nemo potest supra seipsum* is a law which, in the natural order, admits of no exception. Neither can it be urged, that these forms exist in the mind antecedently to any intellectual act. For it is plain that if *reality*, for instance, *causality*, *existence*, *impossibility* (Categories of Kant), are in the mind and

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rule its action, they must be there under the form of concepts, since there is no other form possible under which they could be present. Nor does it matter whether their precedency in the intellect be a precedency of time or of nature only. In either case the difficulty remains. But it may be objected against this last argument with fairer show of truth, that it is plainly sophistical; since it confounds together the psychological and ideological orders. A concept considered psychologically, (that is to say, as it is a something in—a modification of—the soul), is contingent and singular; whereas, considered ideologically, it may be necessary at once and universal, forasmuch as it is representative of that which is both. This is most true. It is not open to question, that a human concept is entitatively contingent and singular; because it is *my* thought and mine only, and because it once was not, now is, and afterwards may cease to be. Yet it may be representatively necessary and universal; because the objective reality it represents is a necessary and universal truth. But the Kantian system of ideology can claim the advantage of no such distinction. For in it cognition is only representative of itself. The sensile perceptions are not representative in the only true sense of the word. The Categories and their *Schemata* are confessedly not representative. The forms of time and space are not representative. Where, then, within the limits of a cognition can any such representative force be discovered, that could justify the distinction in its case between the psychological and ideological orders? In a Kantian concept the entity and object are practically one and cannot, therefore, tolerate mutually opposite attributes.

III. It is contrary to the nature of the human intellect that it should act *blindly;* for it is to the soul that which the eye is to the body. It is contemplative of abstract objective truth, as the eye is contemplative of the objects of sense. But these synthetical *à priori* Judgments are blind acts; seeing that no object is discernible either by previous analysis, or by conclusion of demonstration, or by facts of experience. If, therefore, we admit the possibility of such Judgments, we must also admit that the intellect naturally forms Judgments which are in contradiction to its own essential nature.

IV. Kant maintains that, when the mind pronounces within itself these synthetical *à priori* Judgments, it also at the same time affirms their absolute necessity. But mental affirmation is equivalent to intuition. Therefore, mentally to *affirm* the necessity

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of these Judgments, is to *see* their necessity. But all Judgments wherein the mind perceives, or intues, the necessary connection, —or rather, the necessity of connection,—between subject and predicate, are analytical.

DIFFICULTIES.

I. '*Everything that happens has a cause*,' is evidently a synthetical Judgment; yet it is *à priori* to all experience. It is synthetical, because 'In the conception of *something that happens*, I indeed think an existence which a certain time antecedes, and from this I can derive analytical judgments. But the conception of a cause lies quite out of the above conception, and indicates something entirely different from "that which happens," and is consequently not contained in that conception. How then am I able to assert concerning the general conception—"that which happens"—something entirely different from that conception, and to recognize the conception of cause although not contained in it, yet as belonging to it, and even necessarily? what is here the unknown = X, upon which the understanding rests when it believes it has found, out of the conception A a foreign predicate B, which it nevertheless considers to be connected with it? It cannot be experience, because the principle adduced annexes the two representations, cause and effect, to the representation existence, not only with universality, which experience cannot give, but also with the expression of necessity, therefore completely *à priori* and from pure conceptions[1].'

ANSWER. It would be superfluous to give an elaborate answer to this difficulty, since in the cxix[th] Proposition, (which finds its place in the third Chapter of the present Book), it has been demonstrated that the principle of causality is analytical. What purpose, therefore, could it serve to accumulate arguments for the purpose of disproving the claim to its being considered a synthetical Judgment? Nevertheless, these passages quoted from Kant must not be dismissed without certain animadversions.

i. The enunciation of the Principle of causality in the *Critique*, '*Everything that happens has a cause*,' is slovenly, if not inaccurate.

[1] *Kant's Critique of Pure Reason; Introduction, pp.* 8, 9. The references are invariably to Meiklejohn's translation.

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Happens, more than suggests the idea of chance or of a result the cause of which is unknown. As commonly understood, the Principle is adequately expressed in the words of the cxix^th^ Proposition,—'*Inceptive Being necessarily supposes, or includes essentially in its concept the idea of, its efficient cause.*'

ii. Kant is free to acknowledge that in the conception of something that happens, (let us substitute for this slipshod expression, *Inceptive Being*), is included the concept of an existence which a certain time antedates. Therefore, he allows that the idea of a prior existence,—prior in order of time,—is essentially included in the idea of inceptive Being. Consequently, the Judgment, that *the concept of inceptive Being necessarily includes the concept of a prior Existent distinct from the inceptive Being*, is analytical. But it has been shown that this proposition, when carefully analyzed, resolves itself into the Principle of causality. It will not be amiss to quote here the words of Balmez, who urges the above conclusion with his usual vigour. 'As duration,' he writes, 'is nothing distinct from things, the two terms of the series, B, A,' (B, representing the prior existence necessitated by the beginning of A which stands for the incipient Being), 'of which one precedes the other, cannot be placed in an absolute duration distinct from the things themselves, or in two distinct instants, independently of the things. The relation, then, which exists between B and A is not a relation of one instant to another, since the instants in themselves are nothing; but of one thing to another. Therefore A, inasmuch as it begins, has a necessary relation to B. Therefore B is the necessary condition of the existence of A. Therefore it is demonstrated that every being which begins, depends on an existent being. . . . The difficulties opposed to this demonstration arise from inadvertently violating the supposition by attributing to duration an existence distinct from beings. In order to perceive the whole force of the proof, it is necessary to eliminate entirely the imaginary conception of pure duration: and then it will be seen that the dependence represented as the relation of duration is the dependence of the beings themselves,—a dependence which represents nothing else than the relation expressed by the principle of causality.

'After completely eliminating the conception of pure duration as a thing distinct from beings, there remains only the transition from not-being to being as all that is expressed by the word,

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beginning. In this case we find that the Principle of precedency is the same as the Principle of causality; and as we have had to abstract entirely duration in itself in order to solve the difficulties, we find that if the Principle of causality is to be placed beyond all doubt, and to be regarded as an axiom, it can only rest on the contradiction between not-being and being, or the impossibility of conceiving a being which suddenly makes its appearance without anything more than a pure not-being preceding it[1].'

There is a further remark, which remains to be made, touching the relation of inceptive Being to a prior existence; and it will serve to throw additional light on these observations of the Spanish philosopher. The idea of inceptive Being does not essentially include the idea of *priority of time*. B need not necessarily be prior to A in duration of time. There is nothing intrinsically repugnant in the concept of a creation from everlasting. In such case, (i.e. in the case of an eternal creation), the Creator would not have been prior in duration of time to His creature; yet He would have remained supreme Cause of it, His effect. But there must ever be a *priority of nature*, by virtue of which the creature absolutely and ever depends for its existence on the Creator,—contingent on necessary Being. The creature *as a whole* would not, in the given hypothesis, have been *incipient* being, because it would have been in part coeval from everlasting with the Creator; but it must have been *inceptive*,—that is, it might absolutely not have been,—as not containing within itself necessity of existence,—and might afterwards have begun to be. The priority, therefore, which is essentially included in the concept of inceptive, or contingent, Being, is a priority of nature rather than of time. Nevertheless, a new existence, (which is *de facto* the condition of all contingent being that has ever existed), manifestly supposes another existence, prior to the former in order of time, which is the measure of the beginning of that former. But such priority in the instance of incipient Being necessarily includes that other essential priority of nature, according to the analysis of Balmez just quoted.

II. Kant urges another instance of synthetical *à priori* Judgments. These are his words: 'Mathematical judgments are always synthetical.' Yet, 'Proper mathematical propositions are always judg-

[1] *Balmez' Fundamental Philosophy, B. X, Ch. VII, nn.* 67, 81, 83.

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ments *à priori*, and not empirical, because they carry along with them the conception of necessity, which cannot be given by experience.' After such an introduction, he proceeds to confirm his statement by an example. 'We might, indeed, at first suppose,' he writes, 'that the proposition $7+5=12$, is a merely analytical proposition, following (according to the principle of contradiction) from the conception of a sum of seven and five. But if we regard it more narrowly, we find that our conception of the sum of seven and five contains nothing more than the uniting of both sums into one, whereby it cannot at all be cogitated what this single number is which embraces both. The conception of twelve is by no means obtained by merely cogitating the union of seven and five; and we may analyze our conception of such a possible sum as long as we will, still we shall never discover in it the notion of twelve. We must go beyond these conceptions, and have recourse to an intuition which corresponds to one of the two,—our five fingers, for example, or like Segner in his "Arithmetic," five points, and so by degrees, add the units contained in the five given in the intuition, to the conception of seven. For I first take the number 7, and, for the conception of 5 calling in the aid of the fingers of my hand as objects of intuition, I add the units, which I before took together to make up the number 5, gradually now by means of the material image my hand, to the number 7, and by this process, I at length see the number 12 arise. That 7 should be added to 5, I have certainly cogitated in my conception of a sum $=7+5$, but not that this sum was equal to 12. Arithmetical propositions are therefore always synthetical, of which we may become more clearly convinced by trying larger numbers. For it will thus become quite evident, that turn and twist our conceptions as we may, it is impossible, without having recourse to intuition, to arrive at the sum total or product by means of the mere analysis of our conceptions[1].'

Answer. Purely mathematical Judgments are, all of them, analytical. What, then, must be said of the example which Kant has brought forward? Let us see. The Subject of pure Mathematics is Quantity continuous and discrete. Hence it is, that the fundamental Principle of demonstration in that science is the Principle of *equality*, which is thus enounced: *Things which are equal to one and the same third, are equal to one another.* The premisses, therefore, and

[1] *Critique of Pure Reason, pp.* 9, 10.

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conclusions of the mathematical syllogism are necessarily equations, and in consequence are simply convertible. Take, for instance, the well-known formula for determining the intensity of light, $\frac{i}{I} = \frac{D^2}{d^2}$. If this equation be correct, then conversely $\frac{D^2}{d^2} = \frac{i}{I}$. Now, number is the form or measure of discrete quantity, *as* discrete; i. e. it measures the several unities or, in other words, the several discrete quantities as formally separate each from each. Wherefore, the concept of any given number, whatsoever it may be, essentially contains within itself all these possible groupings of unities, or discrete quantities *as* discrete, which, taken together, would exhaust itself. Thus, 8 represents eight unities (discrete quantities). Consequently, it essentially contains within its concept seven unities plus one; in another form, $8=7+1$. In like manner and for the same reason, $8=6+2$, $8=5+3$, $8=4+3+1$, and so on. Again; $4+3+1$ is as essentially contained in the concept of 8, as $1+1+1+1+1+1+1+1$, i.e. eight unities,—which is the simplest declaration of 8. If, for the sake of brevity or for any other reason, I embrace the first three unities under one form, 3, and the last five under another form, 5, and write $8=3+5$, is there not an essential quantitative identity? Therefore, the Judgment, $8=3+5$, is analytical; and most probably this Kant would not have been tempted to dispute. But if so, seeing that the Judgment, as being an equation, is simply convertible, the converted Judgment, $3+5=8$, is also analytical. To take, then, the example of Kant:—It is plain that the Proposition, $12=7+5$, is an analytical Judgment; if so, that $7+5=12$, is likewise an analytical Judgment. In fact, take the simplest expression of the numbers in the Subject: $(1+1+1+1+1+1+1)+(1+1+1+1+1)=12$; or equals twelve unities. The subject and predicate are identical; because 12 might be reduced also to its simplest expression of twelve units. Remove the brackets, which have been drawn only for greater clearness of illustration; and the two terms of the equation are in every way identical. But how is this altered in any other manner save the form, if I choose to express the first bracket by 7 and the second by 5? Hence, we may reasonably conclude that, in the concept of the synthesis of seven with five, is essentially contained the concept of twelve.

As to the confirmation of his case which Kant offers, one would

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be almost tempted to suspect that the clever philosopher was indulging in a joke at his readers' expense. For, when he appeals to the fact that the multiplication of figures, especially when the factors happen to be large numbers, can, in the case of the majority of men, more especially of beginners, (not in the case of all, remark), only be accomplished by the aid of some sensile perception, such as reckoning on the fingers or with points; is it not plain that, where these helps are made use of, they are employed as aids to a weak intellect as yet untrained in abstract thought, or for the sake of sureness, or as an assistance to the memory, not because the result is conjoined by an unreasoned act of the understanding with the sum of the two figures? Balmez has some apposite animadversions upon this confirmatory illustration of Kant, which are worth transcribing. 'What Kant adds,' he says, 'concerning the necessity of recurring, in this case, to an intuition, with respect to one of the numbers, adding five to seven on the fingers, is exceedingly futile. First, in whatever way he adds the five, there will never be anything but the five that is added, and it will neither give more nor less than $7+5$. Secondly, the successive addition on the *fingers* is equivalent to saying $1+1+1+1+1=5$. This transforms the expression, $7+5=12$, into this other, $7+1+1+1+1+1=12$; but the conception, $1+1+1+1+1$, has the same relation to 5, as $7+5$ to 12; therefore, if $7+5$ are not contained in 12, neither are $7+1+1+1+1+1$ contained in it. It may be replied that Kant does not speak of identity, but of intuitions. This intuition, however, is not the sensation, but the idea; and if the idea, it is only the conception explained. Thirdly, we know this method of intuition not to be even necessary for children.' (Let the remarkable, but by no means rare, instances of skill in mental arithmetic exhibited in our primary schools, bear witness to the truth of this remark.) 'Fourthly, this method is impossible in the case of large numbers[1].'

III. Kant offers another instance of these synthetical *à priori* Judgments. 'Just as little,' he writes, 'is any principle of pure geometry analytical. "A straight line between two points is the shortest," is a synthetical proposition. For my conception of *straight*, contains no notion of *quantity*, but is merely *qualitative*. The conception of the *shortest* is therefore wholly an addition,

[1] *Fundamental Philosophy, B. I, Ch. XXIX, n.* 280.

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and by no analysis can it be extracted from our conception of a straight line[1].'

ANSWER. All the Principles of pure Geometry are analytical. Now for the example which Kant adduces. Let us commence with an examination of the argument, by which he attempts to prove that the proposition,—'*A straight line between two points is the shortest*,'—is not analytical. He asserts, then, that out of a concept included under the Aristotelian Category of quality cannot be extracted, by any process of analysis, a concept like that of *short*, which is a quantitative attribute. But, *straight* falls under the Category of quality. Therefore, out of the concept of a *straight line* cannot be extracted, by any process of analysis, the concept of *the shortest*.

It will appear, on the most cursory inspection, that there are five terms in this syllogism,—*qualitative concept* as middle term, *straight*, *straight line*, *short*, *the shortest*. It is patently true that out of the concept, *straight*, (which is *exclusively* qualitative), the concept of *short*, (which is *absolute*, and exclusively quantitative), can never be extracted. But what is to be said of the concept, *a straight line?* Here, *straight* is a denominative determining its subject of denomination, *line*. But, *line* is in the Category of quantity. Consequently, there is nothing repugnant in the idea that out of the concept of a straight line should be obtained, by analysis, a quantitative property. Further: It must be owned that out of the absolute concept, *straight line*, it would be difficult to extract the notion of *short*, as an essential property of the former. But what of *shortest? Shortest* indicates comparison; and gives to its subject of attribution a relative, in place of an absolute, value. The Judgment, therefore, that 'a straight line between two points is the shortest,' (or, better and more distinctly, *a straight line is the shortest between any two given points*), is equivalent to the following: A certain continuous quantity,—viz. a line that is straight, drawn between any two given points,—is shorter than any line that is not straight, drawn between the same points. Surely, there is no repugnance in admitting that this may be an analytical Judgment, mediate or immediate (about which, presently); since the denominate, which is the subject, is itself in the Category of quantity.

We may now safely proceed to Kant's original antecedent, of

[1] *Critique of Pure Reason, B. I, ch. XXIX, n.* 280.

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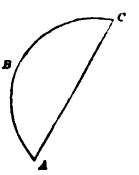
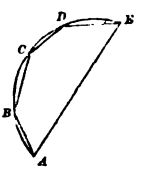
which the reasoning just examined has been offered in proof. Kant asserts that the Judgment, now under discussion, is a *Principle* of pure geometry; in other words, that it is axiomatic and, as such, incapable of demonstration. Now, it is true that, till lately, the proposition in question was considered by mathematicians generally to be self-evident and incapable of demonstration; and that this opinion is not without its adherents among mathematicians of our own time. But the contrary opinion seems to carry with it a greater show of probability. For, as it is urged, a curve cannot be quantitatively measured by superposition, because of its continuous variation; while, on the other hand, the proposition under present consideration is capable of strict mathematical demonstration. If this be true, it is not a Principle; but the conclusion of a demonstrative syllogism. But, in either case, it is analytical[1].

[1] The author has received a communication from a friend, an eminent mathematician, relatively to the question mooted in the text, which he begs leave to lay before the reader.

'"A straight line is the shortest distance between two points." This is not an intuitive truth. Let us convert the Proposition thus: The curved line, ABC, is longer than the straight line, AC. To compare these lengths, we should know how to measure the length of ABC; we should know how many times it contains a given unit of length, i.e. how many times the unit must be added to itself, to produce the length, ABC. Now, the only unit of length furnished by Euclid is a short straight line; ABC is not a straight line. Therefore, it cannot be measured by Euclid's unit. In other words, Euclid's test of equality or inequality is, ultimately, that of superposition. But a curve, inasmuch as it is constantly changing *direction*, cannot be laid accurately on a straight line. Again, if the curve be other than a circle, its *curvature* changes from point to point. Therefore, the superposition of the arc of a circle is impossible. But Euclid treats only of straight lines and circles with their various properties and relations. Therefore, neither the axioms he assumes nor the principles he establishes enable us to measure the length of a curved line. The solution of the problem must be sought in the higher geometry introduced by Newton. The only way in which we can get a clear idea of the length of a curve, is by regarding the curve as the limit of a polygon inscribed in it; the number of sides of the polygon being increased indefinitely, or, which is the same thing, the length of each side being diminished without limit. The solution of the problem, then, rests upon this Proposition:—The ultimate ratio of an indefinitely small arc to its chord is one of equality. Now, is this Proposition self-evident? No. It is necessary to show, 1st, that there is a *limit*; and 2dly, that the limit is *one and the same*, no matter how the polygon be inscribed. Therefore, the *measure* of the length of a curved line is not matter of intuition. Therefore, that the *length* of a curved line is greater than that of a straight line, is not matter of intuition. Therefore, it is not an intuitive truth, that a straight line is the shortest distance between two points; but it may be strictly demonstrated. Thus, the perimeter AB + BC + CD + DE, &c. is ultimately equal to the arc AE. But by Euclid the chord AE is always < the





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IV. 'The science of Natural Philosophy, (Physics),' writes Kant, 'contains in itself synthetical judgments *à priori*, as principles. I shall adduce two propositions. For instance, the proposition, "in all changes of the material world, the quantity of matter remains unchanged;" or, that, "in all communication of motion, action and re-action must always be equal." In both of these, not only is the necessity, and therefore their origin, *à priori* clear, but also that they are synthetical propositions. For in the conception of matter, I do not cogitate its permanency, but merely its presence in space, which it fills. I therefore really go out of and beyond the conception of matter, in order to think on to it something *à priori*, which I did not think in it. The proposition is therefore not analytical, but synthetical, and nevertheless conceived *à priori*; and so it is with regard to the other propositions of the pure part of natural philosophy[1].'

Answer. Kant here offers us two instances of supposed synthetical *à priori* Principles within the domain of physics. We will take them separately in their order.

i. The first instance given is the following Judgment: *In all changes of the material world, the quantity of matter is not changed*, or, *remains unchanged*. Now, before entering on the main question, or rather as a fitting introduction to it, it is necessary to quarrel with the terms in which the proposition has been enunciated by Kant. *Quantity* is an accident of material substance; and so far is it from being true that it does not change, that on the contrary no accident of bodily substance is obnoxious to more frequent changes. All living things are, we might almost say unintermittingly, changing in their quantity, by growth and then by decay. It would have been nearer the mark to have said *mass of matter*; but even this expression would have failed in accuracy, for a reason that will immediately suggest itself, when the second animadversion has been carefully weighed and accurately realized. For one is bound to inquire what Kant means by the word, *matter*, in the proposition as he has enounced it? It cannot mean matter, as Locke is thought to have explained it,—that is to say, a congeries of accidents. It cannot be those phenomena of sense, concerning which alone, Kant

perimeter AB + BC + CD + DE, &c. But that which is always true is ultimately true. Therefore, the chord AE is ultimately < the arc AE.

[1] *Critique of Pure Reason*, p. 11.

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tells us, intuitions are possible to us. For these are ever changing; —to adopt the words of the same philosopher,—in a perpetual flux. It can only mean *primordial matter.* But *primordial matter* is imperceptible by any sense; and, in itself, is only half being,—a purely passive faculty,—a simple receptivity; as will be understood more clearly in the next Book. As such, it takes its place among the four causes of being, and conducts us within the proper domain of metaphysics. If, then, the aforesaid Judgment be a Principle at all, it is not a physical, but a metaphysical Principle. But one is curious to know how Kant, by the sole aid of his peculiar ideology, has reached the subject of his proposition. For primordial matter is neither in the Categories nor in the subsumed *Schemata.* On the other hand, it is absolutely out of the reach of sensile perception. Whence, then, are derived the materials for such a judicial synthesis? And now we reach the third animadversion. Is the Judgment in question a *Principle* at all? Certainly not. It is a demonstrated conclusion; and a demonstrated conclusion, moreover, that is purely analytical. This will be the more clearly understood by beginning with an analysis of the idea of change. What, then, is change? and what are its essential elements? 'Change,' as Suarez has it, 'is the passage, or transit of one thing into another, according to the common acceptation of mankind[1].' It essentially includes three elements; to wit, *that which ceases to be,*—secondly, *that which begins to be,*—and, thirdly, *that which perseveres through the process of mutation.* This third element is of the last necessity; for, in defect of it, that which ceases to be would be wholly independent of that which begins to be, and *vice versa.* Under such circumstances, there might be annihilation of the former and creation or production of the latter; but no change. Change connotes a *thing* changed,—something that is now under one condition, now under another; but that *something* is itself all through. For instance:—Water was cold. That water has ceased to be cold, and has become hot. But the water remains substantially the same under both conditions. So, in change of place, it is the same person who was, (we will say), in London yesterday and is now in Liverpool. It follows, then, that 'in all changes of the material world,' in all bodily changes, there must be a term of departure,—that which ceases to be; a resultant, —that which begins to be; and, lastly, something persevering sub-

[1] *In* 3^m *Partem Summæ, Disp. L,* § 2^a.

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stantially the same through the whole process of change. There is one other essential element of change; but it does not concern us here. Now, it is to be observed that Kant includes in the subject of his Judgment all material changes. Therefore, he does not limit himself to accidental changes (such as are the examples given above); but comprehends *transformations*, that is to say, changes of substantial form. Of these we have instances in the change of the *chrysalis into the butterfly*, in that of *water into steam*, of *a living into a dead body*, of *oxygen and hydrogen in due combination into water*. In these and all similar cases, there must ever be something that perseveres under every change. What, then, may that be, which, *à priori* to all experience, is cognized as essentially remaining one and the same throughout all the substantial as well as accidental changes of bodies? Evidently enough, it must be that *something* which is the fundamental, or ultimate, recipient of all substantial as well as accidental forms,—which is indefinitely capable of actuation, while itself no act,—which is, therefore, purely receptive, and imperfect because passively, and only passively, potential. But this is precisely the definition of primordial matter (*materia prima*). Moreover, such being its nature, it is naturally indestructible, as being indifferent to, and receptive of, whatsoever form. Therefore, matter remains unchanged throughout all the manifold changes of nature. Throw the above analysis into the shape of a syllogism; and the following will be the demonstration required. The ultimate Subject of all transformations, substantial as well as accidental, remains itself unchangeable. But primordial matter is the ultimate Subject of all transformations. Therefore, &c. The Judgment in question, therefore, is the demonstrated conclusion of a purely analytical syllogism. Hence,—to sum up briefly,

a. The Judgment in question is not physical, but metaphysical.

b. It is not a Principle, but a deduced conclusion.

c. It is not synthetical, but purely analytical.

It has not been deemed necessary to criticize that confirmatory proposition of Kant, wherein he states that '*in the conception of matter, I do not cogitate its permanency, but merely its presence in space, which it fills.*' For it is plain enough, that this author's concept of matter must differ entirely from that of the philosophers of the School. *The presence in space which it fills*, could not possibly enter into the concept of primordial matter, for two reasons.

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First of all, *external extension*, by virtue of which bodies are located in space, is an accident which supervenes on the actuation of matter by its form. Then, secondly, a purely receptive faculty, or power (*potentia*), unactuated, as we conceive primordial matter to be, would have a difficulty in either occupying or filling space. But enough of this: It is forestalling a very abtruse question which must presently engage our undivided attention.

ii. The second Principle, which Kant adduces as another instance of a synthetical *à priori* Judgment within the domain of physics, is the third law in Newton's theory of motion, viz. '*In all communication of motion, action and re-action must always be equal.*' But this law is purely empirical, i.e. the result of experiment and observation. Therefore, it is synthetical indeed but not *à priori*.

V. Kant gives one more instance of these supposed Judgments; and now it is taken from the metaphysical science. He pronounces that the following proposition,—'The world must have a beginning,'—is a synthetical *à priori* Judgment [1].

Answer. Touching this question of a *temporal commencement* of the world (if the phrase may be permitted), two different opinions have been maintained in the Schools; not as to the fact, but as to the possibility of a creation from everlasting. The first opinion is, that the existence of the world from everlasting is a metaphysical impossibility, because it involves a contradiction. And this accusation the fautors of that opinion endeavour to justify by what they consider demonstrative proof. According to them, then, the said proposition is not a Principle, but a demonstrated conclusion drawn from analytical premisses. The second opinion is, that the existence of the world from everlasting is not metaphysically impossible; and that, while we accept on Divine faith the fact of its temporal commencement, it still remains true that God might have created it from all eternity, had He so pleased. Such is the opinion of St. Thomas and Suarez. Aristotle holds to the possibility; for he seems to consider it not only possible, but actual. The writer of the present work ranges himself on the side of St. Thomas and Suarez; because the demonstrations hitherto offered by the advocates of the contrary opinion are, in his humble judgment, inconclusive, while the arguments in favour of the second opinion seem to him irrefragable.

[1] *Critique of Pure Reason*, p. 12.

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Whichever of these opinions, however, be true; in neither case would this so-called metaphysical Principle be a synthetical *à priori* Judgment. According to the former, it would be *à priori*, but not synthetical; according to the latter, it would not be *à priori*, though synthetical,—synthesized, however, not by the natural reason motived by experience, but by a supernatural act of faith.

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BOOK V.

CAUSES OF BEING.

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CHAPTER I.

CAUSES OF BEING IN GENERAL.

ARTICLE I.

Principiant and Principiate.

THERE are four cogent reasons why causation should claim a prominent place in any complete metaphysical treatise. The first is, that Cause is a certain determined grade or mode of Being, and can therefore scarcely be disregarded by that science which has Being for its subject-matter. The second is, that Cause is, as it were, a property of Being; since there is no real entity which is not somehow a Cause. The third is, that all science, properly so called, deals with Causes; seeing that, as practical logic teaches, these constitute the middle term of demonstration. But they fall in an especial manner under the cognizance of the supreme science; which not only uses them (as other sciences do) in her demonstrations, but professedly examines into their nature, divisions, differences, influx. Lastly, every being, save the Infinite, is caused; and though the Self-existent is not caused and can have no real Causes, yet there are certain Attributes in Him, which are truly though inadequately conceived as partaking of the nature of Causes, by the medium of which Natural Theology is enabled to deduce strictly scientific conclusions demonstrative of His Nature.

Is there, then, such a thing as a Cause? In other days than our own it would have been deemed superfluous, if not absurd, to moot the question. We should have been told, that one only requires a clear concept of what is understood by a Cause, to be irresistibly persuaded of its reality and real existence on all sides. Since, how-

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ever, modern scepticism has done its best to cast uncertainty on the existence of Causes in general and of efficient Causes in particular, the proofs for the existence of each kind or species of causation will be separately given in the Chapter devoted to each. For the present, in unison with the universal sense of the School, the existence of Causes will be taken for granted; and the discussions will be limited to their general character and divisions.

There is a higher genus under which Cause is ranged; and with it the present inquiry will commence. The Greeks called it ἀρχή, the Latins *Principium;* as distinguished from Cause which the Greeks call αἴτιον, the Latins *Causa.* In the purely *causal* signification of the two words as distinguished from that of mere order, the Greeks would seem to have used these terms indifferently. Much the same may be said of the Latins in pagan times. With the revelation of the Christian doctrine concerning the Blessed Trinity, for the first time was the real distinction between the two laid open to philosophic thought.

It was a difficulty with the author to determine in what way the former of the two terms could be best rendered in English. There are two words which naturally suggest themselves,—*Principle*, and *Beginning;* but there are solid objections to the employment of either. *Principle* would be ambiguous, and is somehow connected in the mind with ethics. Besides, there is its correlative, *Principiatum*, which awaits its English equivalent, and would require the introduction into our vocabulary of the word, *Principled;*—a term, moreover, that does not convey the precise meaning intended. On the other hand, the word, *Beginning*, is intimately associated in the English mind with the idea of time, as consequent upon preceding nothingness. Nor does it easily suggest its correlative; since, though the *Begun* answers in some sort to the *Beginning*, yet it does not convey the idea, at least explicitly, of necessary relation to, and (as in most cases is needed, when *Principium* is used generically) dependence on, the *Beginning* even in its participial use. Wherefore, it has been found necessary to introduce two terms, one of which has a place already in our dictionaries, though not with the philosophic meaning attached to it here; and to call *Principium*, the *Principiant*, —*Principiatum*, the *Principiate*. The Principiant, then, will represent any and every entity that is naturally or conceptually prior in any way to another. This is its widest signification. More specifically, it represents any entity that is absolutely prerequired in a series; on

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the principle that every *second* postulates a *first*,—every *subsequent*, a *precedent*. Consequently, a Principiant may be described generically as that *whence something is*. The *something thence proceeding* is the Principiate.

Principiant is first of all divided into that which is Principiant *in order of being* and that which is Principiant *in order of cognition*. There is this difference between the two; that the former is simple, the latter complex. For every Principiant or principle of cognition (i.e. of a scientific concept) is a self-evident Judgment; and for demonstration two of these is required. Now, a Judgment is evidently complex; since it essentially consists of two terms and a copula. If analysis pursues the inquiry further back, we light upon the *Dignities*, so called, which do not explicitly enter into any demonstration but are the fulcrum of its force. These likewise are self-evident Judgments; as, for instance, *the principle of causality*. But a Principiant of being, in whatever way we take it, is individual; and, even though it may be of a composite nature, is simple *as* being and Principiant, or,—to borrow a logical analogy,—it is a simple term, not a proposition. The Principiant, however, in order of cognition must be left to logicians; as it is foreign to metaphysical inquiry.

A Principiant in order of being is of two kinds. For it may be Principiant either *in mere point of order*, having an *extrinsic* connection, by virtue of some sort of priority or other, with the Principiate; or it may be such *by virtue of a real intrinsic relation*. As the former will be presently eliminated from our field of view, this will be the place to say what has to be said about it. 'There are three orders of entities,' remarks the Angelic Doctor, 'which follow each other in their successive series; viz. the order of *magnitude*, that of *motion*, and that of *time*. For priority and posteriority of motion are according to priority and posteriority of magnitude; while priority and posteriority of time are according to priority and posteriority of motion; as Aristotle has it in the fourth Book of his Physics[1].' A

[1] 'Sunt autem trium rerum ordines sese consequentes; scilicet, magnitudinis, motus, et temporis. Nam secundum prius et posterius in magnitudine, est prius et posterius in motu; et secundum prius et posterius in motu, est prius et posterius in tempore, ut habetur quarto Physicorum.' *In Metaph. L. V, lect.* 1. The passage to which St. Thomas alludes is as follows: Ἐπεὶ δ' ἐν τῷ μεγέθει ἐστὶ τὸ πρότερον καὶ ὕστερον, ἀνάγκη καὶ ἐν κινήσει εἶναι τὸ πρότερον καὶ ὕστερον, ἀνάλογον τοῖς ἐκεῖ· ἀλλὰ μὴν καὶ ἐν χρόνῳ ἐστὶ τὸ πρότερον καὶ ὕστερον διὰ τὸ ἀκολουθεῖν ἀεὶ θατέρῳ θάτερον αὐτῶν. *Phys. L. IV, c.* 11, *init.*

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little reflection will suffice to justify this statement of the two philosophers. For in communicated motion the order of successive movements is evidently measured by the order of succession in the molecules that constitute the size of a body to which the motion is communicated. Take the instance of *a cannon* made on a billiard-table, by way of illustration; for the phenomenon is more easily detected in the case of distinct bodies. There are three sensible motions communicated in all, or rather, three communications of motion; viz. that communicated to *the striker's ball*, thence communicated to *the object-ball*, and thence to *the remaining ball*. The same is sometimes sensibly appreciable in the instance of the constituent molecules (shall we call them?) of one and the same body. We see it in the enlarging circles on the bosom of a lake, when a stone is thrown into it; in the vibrations of a musical chord; in the propagation of heat (if heat be motion) along an iron bar. The third order presents no difficulty; since it is well known that time is measured by the motion of the heavenly bodies. In the illustrations given above, the Principiant is more or less causal; but there are Principiants, in each of these orders, that are such principally, if not entirely, in virtue of mere succession or other like extrinsic connection. Thus, in magnitude or continuous quantity, *a point* is prior to *a line*, a line to *a plane*, a plane to *a solid*. In motion, assuming *the yard* for the unity of measure, the passage of a pedestrian over *the first yard* is prior to his passage over *the second*. In order of time, *the dawn* is Principiant of *the day; the first of January* is the Principiant of *all the days in the year*. Besides these already mentioned, there are other orders; such as that of place, for instance. He who sits at the head of the table is said to occupy the *first* place; the rest are ranged *after* him. So, in moral bodies,—that is to say, societies whether ecclesiastical or civil,—there is a priority of dignity. Thus, the archbishop of a province is called a *primate;* and the first lord of the treasury is known as the *premier* or *prime* minister. Lastly, in a great majority of such cases, there is an absolute, and there is likewise a relative, priority. Thus, in numbers, *one* is absolutely first; *two* is prior relatively to *three*. So, *the first day of the month* is not necessarily *the first day of the year;* nor *the first day of the week, the first day of the month*. Similarly, the *first officer of a regiment* is not *the first officer of an army*, and *the lord-mayor of London* is not *the Queen of England*. But these and numerous other kinds of Principiants may be dismissed; as they have little or no con-

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nection with the subject-matter of this Book. There are other Principiants, therefore, which are more deserving of philosophical investigation; called such by virtue of a real intrinsic relation of some sort subsisting between themselves and their Principiates. This relation may be of two kinds. For the Principiant may be related to the Principiate by virtue of a positive influx and communication of itself to its correlative. Now, there is but one instance in which this positive influx is not *causal;* and the one exception is to be found in the mystery of the Blessed Trinity. But, as this is a truth whose cognition surpasses the limits of unassisted reason, it belongs to Theology rather than to philosophy, and cannot find admittance into our present discussions. Speaking, then, the language of pure philosophy, we may say that all Principiants of this kind are causes. But a Principiate may be indebted for its origin to its Principiant, not by reason of any positive influx or communication of being, but solely because of a necessary intrinsic relation which the two bear to each other. It is in such sense that *privation* is enumerated among the Principiants of being; forasmuch as, in the established order of things, *corruption* is a necessary antecedent of *natural generation.* Aristotle supplies us with another division of these Principiants, properly so called; to wit, Principiants of an entity *in the process of its production,* and Principiants of an entity *in its ultimate constitution.* To the former belong all Principiants of motion, or operation, or successiveness. For instance, *the cue* is the immediate, though instrumental, Principiant of the motion communicated to *the billiard-balls;* and *the player's ball* is relatively Principiant of the motion communicated to *the object-ball. Active generation* is the Principiant of *passive generation,* or conception. *The first stroke of the sculptor's chisel* on his block of marble is, in the language of art, Principiant of *the bust. The first syllable pronounced* is Principiant of *the complete sentence;* just as *the last syllable* is Principiant of *the idea conveyed.* To the latter belong all those Principiants of being which, in one way or other, appertain to, or exist in, the constituted Principiate. But of these more anon. The passage from Aristotle here referred to shall be given; because it introduces one other division which will be brought into service in the next Article. 'It is common,' he says, 'to all Principiants, to be that whence first a thing is, or is generated, or known.' Hence, Principiant *in order of constituted being;* Principiant *in order of generation;* Principiant *in order of cognition.* 'And of these some are

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intrinsic, others *extrinsic*[1].' Assuming, then, Principiant and Principiate in their philosophical meaning, two things are plain. The one is, that these two concepts are of wider periphery than those of Cause and Effect. The other is, that they include the latter as subordinate determinations. Whence it follows, that an accurate perception of the nature of a Principiant will conduce, in no slight measure, to a clearer understanding of the nature of a cause.

PROPOSITION CXXVIII.

Between the Principiant and the Principiate there subsists a true relation.

The truth of this Proposition is self-evident, when once the terms are understood. For a Principiant is that from which in one way or another the Principiate proceeds; and the Principiate is that which in some way or other proceeds really, and not conceptually only, from the Principiant. But between *the origin* and *the originated* there is real relation, since origin connotes the originated, and *vice versa;* and, in like manner, Principiant connotes Principiate. Again: The two are entitatively as well as conceptually simultaneous; that is to say, if the Principiant exist *as* Principiant, the Principiate must also exist, nor is it possible to conceive one without having at the same time a concept of the other. But these are specific properties which evince the presence of a true relation; as will be seen later on, when we come to consider that Category.

PROPOSITION CXXIX.

The Principiant and Principiate are really distinguished from each other.

According to the established doctrine of relations, this Proposition follows as a Corollary from the preceding. For, in every real relation it is necessary that there should subsist a real distinction between the subject and term, or, in other words, between the relative and its correlative.

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[1] *πασῶν μὲν οὖν κοινὸν τῶν ἀρχῶν τὸ πρῶτον εἶναι ὅθεν ἢ ἔστιν ἢ γίγνεται ἢ γιγνώσκεται. τούτων δὲ αἱ μὲν ἐνυπάρχουσαί εἰσιν αἱ δὲ ἐκτός. Met. L. IV, c.* 1.

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PROPOSITION CXXX.

A Principiant has always a priority of some sort over its Principiate.

PROLEGOMENON.

There are three principal kinds of *priority;* two of which are properly so called, while the last has received the name in a secondary and improper sense. i. The first species of priority is that of *time;* which subsists between two entities, one of which existed before the other. Such is partially the priority of *the father* over his *son*, of a *fossil* over *living things*, of *the Assyrian* over the *Roman Empire.* ii. The second and most important species of priority is that of *nature*, which subsists between two entities, one of which is in its nature independent of the other, while the nature of this other is dependent on the former. This second species may be either conjoined with, or separate from, priority of time. In the instance of *father* and *son* the two are conjoined; for the father not only exists before the son; but the nature of the son is dependent on the father, while that of the father is entirely independent of the nature of the son. The same may be predicated of their respective existences. The term, *priority of nature*, however, is more specially applied to those cases wherein there is no priority of time, but a complete synchronism, between the two terms. Thus, *light* is naturally prior to *illumination;* because, although the two are simultaneous in point of time, the latter is dependent on the former, not the former on the latter. So, the *existence of the human soul* is naturally prior to *its substantial union with the body;* although there is no priority of time. Similarly, if the world had existed from all eternity, (and there is nothing philosophically repugnant in the supposition, as has been remarked before), *the Supreme Creator* would have been still prior to His *creation* by priority of nature, though He would not in such case have been prior in point of time. So again, *lightning* is naturally prior to *thunder;* though the two are simultaneous. In both these species of priority just mentioned,—to wit, in that of time and that of nature,—there is recognizable an imperfection of some sort in the entity that is posterior. iii. The third species of priority (as it is called) consists in a mere *priority of origin;* and admits of no perfection in the precedent, that is wanting to the subsequent. By

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virtue of such priority, the Principiant communicates his nature to the Principiate, not the Principiate to the Principiant; though the nature in both is absolutely the same. But such priority is to be found once only; and carries us into supernatural Theology. Wherefore, though it was necessary to include it in a complete enumeration of the different species of priority, no further reference will be made to it.

For those who have mastered the introductory observations and the above *Prolegomenon*, a declaration of this Thesis will hardly be required. For to be a Principiant in the strictly philosophical sense of the term, necessarily supposes a connection,—nay more, an intrinsic connection,—with the Principiate, and a priority over it. Moreover, this priority cannot be one merely of time. *A man of yesterday*, taken at hap-hazard, is not acknowledged to be the Principiant of *to-day's new-born child*, merely because he happened to be born before it. *The preceding words in a sentence*, on the contrary, are recognized as Principiants of *the succeeding words;* because there is an intimate dependence of connection, that makes the former necessary to the latter and to the integration of the whole sentence as representative of thought. So, *the motion of the cue* is conditionally necessary *to that of the ball;* but *the motion of the ball* is evidently not necessary to *that of the cue.* The same truth is happily illustrated in the instance of *number;* where the apparent priority is serial. For, the number, *one*, is prior to all the rest; so that the rest depend upon it as their measure, while itself is independent of them. One difficulty might suggest itself with respect to this declaration. At first sight it does not seem to follow, because the Principiant has some sort of *connection* with the Principiate, that therefore the former must necessarily have a priority over the latter; because simple connection may subsist between equals. Nor, indeed, is this the contention here. That connection must be the special connection of a Principiant. Let us take an example, wherein the priority is purely accidental; since the position of the two connected terms might the next moment be reversed. There is evidently a real connection between the motion of *the player's ball* and that of *the object-ball.* Change the balls; that is to say, let the object-ball become the player's ball. The connection would be inverted. There is, therefore, no priority of nature properly so called. But there is *hic et nunc* a real relation between the player's ball and its motion, as Principiant, and the object-ball

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and its motion, as Principiate. That connection involves serial priority and, because it involves a series of motions, priority of time as well.

ARTICLE II.

Cause.

I. Definition of Cause.

Cause, in the strict acceptation of the word, is a principiant which essentially and positively communicates being to another entity, or, which produces an existing essence distinct from its own. Accordingly, St. Thomas remarks, 'That is caused, whose being is distinct from that which causes[1].' *Essentially and positively*, is inserted in the definition, in order to exclude those principiants which only by accident, as it were, help towards communicating being to another entity; like *corruption*, for instance, which, for the reason that it is a mere privation, cannot essentially and positively communicate being to another. This definition will be more clearly understood by the aid of certain Propositions which are presently to follow. But here is the place to call the reader's attention to certain observations of Balmez, which, if left unnoticed, might awaken suspicions touching their sufficiency or value. It is the more necessary to refer to them, because they echo more or less a favourite complaint of our modern sceptics. It is true that this great Spanish philosopher happens to be discoursing exclusively on *efficient* causation; but his remarks, if just, will tell with perhaps greater force when applied to the other causes. He writes, 'In what does the relation of efficient causality consist? what is the meaning of the dependence of the effect in relation to the cause? This is a difficult and a profound question; one of the most difficult and most profound which can be presented to science. The majority of men and even of philosophers imagine that they can solve it by using words which, rightly analyzed, explain nothing.

'To cause, it is said, is to give being. What means to give? To give is here synonymous with to produce. What means to produce? With this the explanations are at an end, unless one should wish to fall into a vicious circle, saying that to produce is to cause or give being.

[1] 'Hoc fit' (i. e. causatur) 'cujus esse est diversum a faciente.' *Po*. Q. iii, a. 13, 5m.

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'A cause, it is also said, is that from which a thing results. What is understood by resulting? To emanate. What is to emanate? To emanate is to proceed, to flow from another. Always the same thing: metaphorical expressions which have all the same meaning.

'It is said that a cause is that which *gives, produces, makes, communicates, generates*, etc., and that an effect is that which *receives, proceeds, emanates, results, flows, comes, springs*, etc.[1]'

On reading these paragraphs, the first thing that strikes one as curious is, that the illustrious writer should accuse explanations or definitions of a term, because they 'have all the same meaning,' or should caution his readers against the danger of falling 'into a vicious circle' in the use of them. Lexicographers in general would find themselves in bad case, if their labours must be judged by such a standard. Again: It is a general persuasion, that *a vicious circle* is a syllogistic disease which is not endemic among explanations and definitions. These animadversions must not be accounted either hypercritical or superfluous; for they help to reveal the blot in the complaint of Balmez. There are concepts, and objects of concepts, so simple in their complexion because they are Transcendentals, that their very simplicity makes it difficult, if not impossible, to describe or explain them, save by the use of expressions which are all but tautological. For instance, if I am asked what *being* is, I answer, *existing*. But what is *existing? To be in act.* But what is *to be in act? To exist.* How is it to be helped? You cannot paint light; neither can you measure a mathematical point. Yet, though so simple in complexion, these Transcendentals contain within them a deep mine of truth, which it is undeniably difficult for us men to comprehend. In order to do so, it is necessary to commence with very simple descriptive definitions, (for a real logical definition of a Transcendental is a contradiction in terms),—an explanation which may seem to be almost a repetition of the same thing; yet, by means of it, great truths may be eventually evolved, and meanwhile the mind may gradually grow into the fulness of the idea by shades of difference conveyed through the medium of various equivalents. Wherefore, it does not at all follow, because *analogical* (not 'metaphorical[2],' for there is not a metaphorical term in the list given by

[1] *Fundamental Philosophy, Bk. X, Ch. 8, nn. 87, 88.*

[2] All analogical terms were originally metaphors that have since become naturalized. Who would call the *foot* of a hill,—the *foot* of a table,—the *foundation* of an argument,—power *emanating* from the Crown,—*crass* ignorance,—*dark* schemes, etc. metaphors?

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Balmez) words are employed in the description of such an object, that the intellect receives no increase of cognition by means of them. The present is an instance in point. If one man strikes another, there is nothing plainer to most people than the fact that the former is Cause of the blow and accompanying pain to which the latter has been subjected. So again, if a kettle of water is placed upon a clear fire and the water passes off in steam, the good housewife would undoubtingly lay the misery of her empty kettle to the charge of the big fire. So far, all is easy. But if one should be urged to define or describe the nature of this causal action, the task proves as difficult as, for instance, to explain Being or essence. Still, if I should begin by saying that the heat *emanated* from the fire and the heat of the fire *caused* the water to boil, so that the fire *produced* the steam by its heat; am I teaching nothing, but simply repeating myself? Why, the whole doctrine of material generation is implicitly contained in my answer. When, then, it is asserted that '*to cause is to give, to produce, being*' in another entity distinct from the causal agent, or that '*a cause is that from which a thing results,—emanates,—proceeds,—flows,*' it strikes one as something more than paradoxical to maintain that such expressions '*mean nothing.*' It is true that they do not go near to exhaust the reality which they are intended to sketch in by way of a fundamental outline; but they effectively serve to define our elementary ideas touching causal action. And this is saying a great deal.

II. States of Cause.

A Cause is said to be in its *second act*, when it actually produces its Effect. It is said to be in its *proximate first act*, if no one of the conditions necessary for the production of the Effect is wanting. It is said to be in *remote first act*, if either all or some of those conditions are wanting. Thus, for example, (to borrow the illustration of Taparelli), when a steam-engine is actually propelling the vessel over the waves, it is in its *second act*. When the steam is up,—the cables on board,—the anchor weighed,—the helmsman at the wheel,—the captain on the paddle-box,—the plank removed, but the machine not yet set in motion,—it is in its *proximate first act*. When the steam has been let off,—the fires out,—the vessel moored,—the ship's company ashore,—it is in its *remote first act*. To take one more instance from another and higher order:—The intellect sets before a man some definite good, say, (to put it in the concrete), an

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official appointment in New South Wales. At present, there exists a mere wish, for the Colonial Secretary has not written; indeed, the place is not yet vacant and the wisher has not yet taken his degree. Still, it comes back constantly into the man's thoughts; and his will is drawn towards the idea. It is in its *remote first act.* But our supposed friend has taken his degree,—the place is now vacant,—the Colonial Secretary has written to offer him the appointment. It remains with him to determine whether he will accept or not. He consults his friends. He ponders over the reasons for and against. The will is now in its *proximate first act.* It is in this stage of the process, patent to self-consciousness, that free-will makes itself known and felt. At length, the choice is made and the appointment accepted. The will has reached its *second act.*

III. Comparison between principiant and Cause.

From all that has been said in this and the preceding Article it will appear, that there is a real distinction between principiant and Cause; and that the former is of wider periphery than the latter. For, i. Not every principiant is causal; though every Cause is a principiant. There are principiants in time, order, series, cognition; but they are not univocally Causes. ii. When principiants are causal, they are not all essentially and positively causal. Such as possess these properties, are *ipso facto* Causes. Thus, certain privations are principiants, not Causes. When, as sometimes happens, they are included among Causes, the word is used analogically. iii. A principiant may communicate to another, existing essence which is numerically its own; in which case that existing essence is not caused. If a principiant produces in another an existing essence numerically distinct from its own, it is identified with Cause. Hence, Cause is a sort of species under principiant. This latter, accordingly, has been given as the *quasi* genus of Cause in the description of it which heads this Article.

IV. The relation of Cause to the Categories.

Cause is a true Transcendental; for causality is, so to say, a property of all Being. Every real entity is a Cause; and every real entity, with one Exception, is in turn an Effect. It is a pregnant remark of the Angelic Doctor, that 'everything which exists must be either a cause or caused; otherwise, they (?) would

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not have an order relatively to other things[1].' On causality, therefore, depends in great measure the unification of entities and consequent unity of scientific cognition. As St. Thomas remarks elsewhere, 'If diverse entities are in any way united, there is necessarily some cause for this union. For diverse entities are not united of themselves. Hence it is that, whenever a certain unity is discovered in things diverse, those diverse unities must receive such unity from some one cause; as, for instance, diverse heated bodies receive their heat from fire[2].' Hence, the middle term of demonstration is one or other of the causes of the subject and attribute; and science is defined to be *the certain cognition of things by their causes.*

In considering the nature of a Cause, there are three problems which demand our attention: *A.* What is the nature of a Cause considered with reference to its Effect? *B.* What is the determinate concept of an Effect? *C.* What is that precisely, which is termed the influx or causality of a Cause?

A.

What is the nature of a Cause considered with reference to its Effect?

PROPOSITION CXXXI.

Between a Cause and its Effect there exists a relation at least not-mutual.

Prolegomenon.

This is not the place to enter upon an examination touching the nature of relation or its different kinds. But it will be necessary to explain, however briefly, the difference between a *mutual* and *not-mutual* relation. A mutual relation is that wherein there is a real foundation for the relation in each of the two terms; as, for instance, in the relation between *father* and *son* or between *king* and *subject*. A not-mutual relation is one wherein the foundation

[1] 'Quidquid est in rebus oportet quod causa vel causatum sit; alioquin ad alia ordinem non haberent,' (haberet?). *Cg. L. III, c°.* 107, 2°.

[2] 'Si enim diversa in aliquo uniantur, necesse est hujus unionis causam esse aliquam; non enim diversa secundum se uniuntur. Et inde est quod quandocunque in diversis invenitur aliquid unum, oportet quod illa diversa illud unum ab aliqua una causa recipiant; sicut diversa corpora calida habent calorem ab igne.' 1ae *LXV*, 1, *c.*

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is real in one term only, while it is purely logical in the other. Such is the relation between *science*, subjectively understood, and its *object:* or, again, that between the *Creator* and His *creature.* There is a real foundation in science and in the creature; the foundation of the relation is purely conceptual in the object of science, as also in the Creator.

This Proposition follows as a Corollary from the hundred and twenty-eighth Proposition, in the which it is declared that between every principiant and its principiate there intercedes a true relation. For every cause is a principiant. Therefore, that which is a property of the latter, will be likewise a property of the former.

The restrictive clause, *at least not-mutual*, has been added; because, in the instance of some causes, notably of the First Cause, a real foundation of the acknowledged relation is only discoverable in the Effect.

PROPOSITION CXXXII.

Not only is the relation of the Cause really distinguished from the relation which is in the Effect; but in like manner the absolute entity of the Cause is really distinguished from the absolute entity of the Effect.

I. The first Member of the Proposition, wherein it is affirmed that *the relation in the Cause is really distinguished from the relation in the Effect*, is plainly deducible from the *Prolegomena* touching the nature of a Cause. For it is of the essence of a Cause to communicate; while it is of the essence of an Effect to receive. The former is naturally independent in its entity of the latter; while the latter is as naturally dependent in its entity on the former. Now, the foundation of relation in the Cause is this communicating to its Effect; and the foundation of the relation in the Effect is this passive receiving from, or dependence on, the Cause. But these two are really distinguished from each other. Therefore, etc.

II. The second Member, which affirms that *the absolute entity of the Cause is really distinguished from the absolute entity of the Effect*, is thus declared: i. From induction of experience. For in all the instances of entities which are accounted to be Causes by the general verdict of common sense, it is invariably found that the existing essence of the Cause is numerically distinct from that of the Effect, *as such.* These last conditionating words have been added, because there is nothing to prevent the same being from existing at once

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as Cause and Effect; but then, if in the same order of causality, it must be Cause in relation to one entity and Effect in relation to another. In no case, however, can a thing be Cause or Effect to itself. ii. It follows from the descriptive definition given of a Cause. For Cause is declared to be a principiant which communicates being to another entity, or which produces an existing essence other than its own. And this means *really* other.

PROPOSITION CXXXIII.

A Cause is prior in order of nature, but not necessarily in order of time, to its Effect.

I. The first Member of this Proposition, viz. that *a Cause is prior in order of nature to its Effect*, follows from the concept of Cause, interpreted by the explanation of priority of nature given in the *Prolegomenon* to the hundred and thirtieth Proposition. For, if a Cause is a principiant that communicates being to an entity distinct from itself, or again, is a principiant that produces an existing essence distinct from its own; it is plain that the Effect, or that which has been caused, depended for its being,—its existing essence,—on the Cause which originally communicated it. But the Cause neither was nor is in any wise, *as cause*, dependent on its Effect. Therefore, the Cause is, and must be, prior in order of nature to its Effect.

II. The second Member, in which it is affirmed that *the Cause is not necessarily prior in order of time to the Effect*, needs a more elaborate declaration. First of all, then, it is commended to us by experience. For there is no one who doubts that *illumination* is the effect of *light;* yet it is no less evident that the two are synchronous. Similarly, *action* is the cause of *passion* (i.e. of that which is received in the entity that suffers); yet the passion is simultaneous, must be simultaneous, with the action. Thus, for instance, *the impulsion given to a ball by the cue* is simultaneous with the reception of that impulse by the ball. But here occurs a difficulty. For, while the Angelic Doctor gives the seal of his authority to the doctrine maintained in this member of the Thesis, he seems at first sight to dissent from its application in particular to the last-mentioned instances. Let us listen to what he says. 'Since the Principiant of motion,' these are his words, 'necessarily

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precedes the term in duration of time, (which must needs be on account of the succession of motion), and since there cannot be a principiant, or commencement, of motion without a Cause that operates to produce it; it needs must be that the *motive* Cause in the production of anything should precede in duration of time that which is produced by it. Wherefore, that which proceeds from anything without motion, simultaneously endures with that from which it proceeds; as, for instance, brightness in fire or in the sun. For brightness proceeds all at once, and not successively, from a lucid body; since illumination is not motion, but the term of motion[1].' Now, the reasoning of St. Thomas is, as usual, sufficiently clear. In motion there is succession; consequently, the term of motion,—that is to say, the point at which it is arrested,—is posterior in order of time to the beginning of the motion, or point at which it started. But, if the beginning of motion is prior in order of time to the term; *à fortiori* the moving cause must be, in the same order, prior to the term. Where, however, there is no motion in the procession of Effect from Cause, there is no intrinsic necessity for either priority or posteriority of time; because there is no succession. And this is the *à priori* argument in favour of this Member of the Thesis. There is no reason either from the nature of causal influx, or from the essence of a Cause, or from that of an Effect, why an Effect should not be synchronous with its Cause. Not from the nature of causal influx; because not all causality is successive: Not from the essence of a Cause; for there is nothing repugnant in the concept that an entity should exercise causal action at the same moment in which it exists outside its Causes: Lastly, not from the essence of an Effect, whose dependence is fully satisfied by that priority of nature which is the inalienable prerogative of its Cause.

Nevertheless, the above teaching of St. Thomas seems at all events to cast a doubt upon the relevancy of some of the examples which have been adduced. For, in a great number of cases derived from *action* and *passion*,—notably in the instance of *the cue* and *the billiard-ball*,—the causality is one of motion and successive. They

[1] 'Cum autem principium motus de necessitate terminum motus duratione praecedat, quod necesse est propter motus successionem, nec possit esse motus principium vel initium sine causa ad producendum movente; necesse est ut causa movens ad aliquid producendum praecedat duratione id quod ab ea producitur. Unde quod ab aliquo sine motu procedit, simul est duratione cum eo a quo procedit, sicut splendor in igne vel in sole. Nam splendor subito et non successive a corpore lucido procedit, cum illuminatio non sit motus, sed terminus motus.' *Po*ª. *Q. III, a* 13, *c.*

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ought, therefore, rather to be relegated to the opposite class, wherein priority of time is acknowledged. To resume the instance of *the cue*,—the player, who is the cause of motion, prepares himself, chalks his cue, forms his bridge, gives the practised swing to his stroke, and thus communicates the desired motion to his ball. But all this must take place in succession of time. Wherefore, the cause is prior in order of time to his effect. The answer to this apparent difficulty will help to elucidate the doctrine now under our examination. Observe, then, at the outset, that the example given by St. Thomas is obnoxious to the same criticism; since *light* and *illumination* proceed from successive waves of ether. Nor was St. Thomas ignorant of the fact; for he expressly connects illumination with motion. But, such being the case, how can this latter be synchronous with its cause? The Angelic Doctor answers, by reminding us of the fact, that brightness or illumination is not motion, because it is the *term* of motion. But the term of motion is rest. True; yet this would seem only to increase the difficulty. For, if there is motion between the sun or other illuminating cause and the illumination which is term of that motion, according to the showing of St. Thomas there must be priority of duration on the part of the cause. What is the solution of this problem? It is easy to perceive that to human thought illumination connotes the human eye. A body is said to be illuminated, when the waves of light are reflected from the object said to be illuminated on to the retina. Illumination, therefore, as we ordinarily understand it, is the *actual impact* of the rays of light on the optic nerve. If the expression be limited to the illuminated object, it will make little difference; for then it will mean *the actual impact* of the undulations of ether upon that body. The great point to be borne in mind is, that it is *actual impact*,—not motion, but term of motion. Now, *the actual impact* of the rays of light is synchronous with the term of motion, which is either the illuminated object or the eye, as the case may be. Neither would it affect one whit the cogency of the illustration, though St. Thomas should have held the emanation theory; for the explanation would hold equally good. To return now to the example of *the cue* and *the billiard-ball*:—In the illustration it was not intended to introduce the *player*, or principal agent; for here the objection is valid. But the proximate cause, i.e. the impulsion, or *actual impact*, of the cue was compared with the initial motion of the ball as its effect; and, in this way, there are

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two terms, not motion,—to wit, the term in which the cue motion ceases, and the term from which the ball-motion commences.

This same truth is further confirmed by a fact in causality, to which attention has been already directed. For it has been noticed that the same entity, in regard of the same entity, may be at once cause and effect in different lines of causation. Evidently, therefore, in such cases there can be no possibility of any priority in order of time. This is curiously illustrated in the instance of primordial matter, about which there will be much to say in the next Chapter. For primordial matter cannot exist, save in union with some substantial form; in other words, it can only co-exist. Consequently, it cannot be temporarily prior to the composite of which, nevertheless, it is the material cause. Again: In one way it is the cause of the form, while in another way the form is the cause of it; yet both are of their very nature synchronous.

PROPOSITION CXXXIV.

A Cause in its second act is simultaneous with its effect.

This Proposition hardly stands in need of declaration, if the reader will only recall to mind the explanation given touching the acts, or states, of a cause among the *Prolegomena* at the commencement of the present Article. For a cause in its second act is a cause in its actual influx; but the actual influx of a cause is neither more nor less than the effect as produced. The Thesis likewise follows as a Corollary from the preceding, and from the teaching of St. Thomas therein contained. In fact, the examples and illustrations are all of greater cogency here; since in every case the cause is understood to be in its second act. It admits of confirmation from the doctrine of relation. For, when the cause is in its second act and the effect accordingly produced, there arises *ipso facto* a predicamental relation between the two. The cause regards its effect; and the effect its cause. But it is one of the essential properties of predicamental relation, that the relative and its correlative should be simultaneous in being as in cognition.

B.

What is the determinate concept of an Effect?

As it is of the nature of a cause to communicate, so is it of the nature of an effect to receive; with this difference, however, that the

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cause must first be, (according to priority in order of nature), before it can communicate, whereas the effect receives by *being*. In its case, to receive is to be. Neither does it affect the truth of this statement, whether the effect be substantial and complete, or accidental and imperfect. For although, in the latter instance, the effect is received in an entity already existing; yet the cause does not regard as its formal term and correlative the Subject of the communication or production, but the communication or production as received in the Subject. Thus, when *fire heats iron*, the *iron* is not the correlative of fire as cause, but the *quality of heat* communicated to the iron as its Subject. For the quality of heat is the effect of the fire. It follows, that the effect, as such, must offer a passive influx, (if one may use the expression),—a receptability, by virtue of which it is essentially dependent on the cause for its entitative existence. But more of this presently.

C.

What is precisely that which is called the influx, or causality, of the Cause?

The influx, or causality, of the Cause is nothing else than the emanation, communication, or production of the effect. It may be considered under two aspects; i. as something real in the cause, ii. as something real in the effect. In accordance with this division, the following Propositions will afford an answer to the problem.

PROPOSITION CXXXV.

Causality in the Cause is a certain reality whose existence is either absolutely or conditionally necessary, as well as sufficient, for the existence of the effect.

Prolegomenon.

The causality of the First Cause alone is at once *absolutely* necessary and *absolutely* sufficient for the existence of any whatsoever effect. *Conditional* necessity is that which exists as the consequence of an established order by which it is conditioned; though *absolutely*, i.e. antecedently to any established order, no such necessity exists. Thus, for instance, *the verdict of a jury* is necessary and sufficient, in this country, for passing sentence of *capital punishment*; but it is not so in every country. *Conditional* sufficiency is a sufficiency within the limit of a certain order of secondary causes, that receives its appointed virtue and arrangement from the First Cause.

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THE PROPOSITION IS THUS DECLARED.

That reality, whose existence in the cause, either alone or in conjunction with other realities in a determined order, renders possible the existence of the effect, whose non-existence renders the existence of the effect either absolutely or conditionally impossible, is a reality whose existence is either absolutely or conditionally necessary and sufficient for the existence of the effect. But causality, or the actual influx of the cause into the effect, is that reality whose existence in the cause, either alone or in conjunction with other realities in a determined order, renders the existence of the effect possible, whose non-existence in the cause renders the existence of the effect either absolutely or conditionally impossible. Therefore, etc. There can be no doubt about the *Major*. The *Minor* needs illustration rather than declaration. It is quite certain, supposing there to be a First Cause such as Aristotle demonstrates, that *water* could be created by Him without any intervention of secondary causes. For He Who can give to other causes the power of producing it, must *à fortiori* have the power of producing it Himself. Further: since no second causes could exist, much less could have the power of producing water, save by virtue of the prevenient causality of the First Cause; it is plain that, whether His influx be immediate or mediate, solitary or in conjunction, in either case His causality is *absolutely* necessary and *absolutely* sufficient for the production of water. Again: His Wisdom and omnipotent Will are that Reality in the First Cause, (to speak after the manner of human thinking), Whose existence renders the existence of water possible, Whose non-existence renders its production absolutely impossible. That which is true of this effect, is also equally true of all other effects; so that the above explanation will cover the other examples without need of repetition. Now, according to the established physical order, it is necessary to the production of water that *the volume of oxygen, as compared with that of hydrogen, should be in the proportion of one to two.* Such is the normal constitution of water according to physical law. Therefore, the combination of one volume of oxygen with two of hydrogen is *conditionally,* (that is to say, according to the natural order freely appointed), necessary as well as sufficient for the production of water, so far as the material constituents are concerned. This is an instance of *a material cause.* Again: In the physical order, *the transformation of the chrysalis into a butterfly* cannot be effected without the recession of the substantial form of the chrysalis into the potentiality of

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the matter and the introduction of the substantial form of the butterfly. The former is required as a *conditio sine qua non;* the latter is conditionally necessary, and sufficient in its own line of causation, for the production of the butterfly. Here you have an instance of a *formal cause* in the Category of Substance. Once more: *Water cannot become hot* without the introduction of the form of heat into it; and its introduction is sufficient to make the water hot. This is an instance of an *accidental formal cause.* Lastly: The accidental form of heat is introduced into the water by the agency of fire or that which is tantamount to it in calorific energy; such agency is necessary and sufficient for the introduction of the form of heat into the water. Here you have an instance of an *efficient cause.* In every one of these examples, the necessity and sufficiency are conditioned, not absolute. They follow the exigency of an established order which might never have existed. That order is reducible in ultimate analysis to the Wisdom and omnipotent Will of the First Cause.

Corollary.

Occasion, Condition, Condition sine qua non, are distinguished from *Cause,* though some of them have occasionally been called causes; because none of the former have that sufficiency which essentially belongs to the latter, while the *condition sine qua non* alone can boast of a like necessity. It is of importance, however, to observe, that a *condition* may be, and for the most part is, a cause; but then it is the cause of another effect, not of that particular effect, relatively to which it assumes the nature of a condition. Thus, for instance, *it is a necessary condition of scientific knowledge, that a man should be in possession of his faculties*; but the possession of his faculties does not cause scientific knowledge. So, in like manner, *in order to slake one's thirst with water, it is necessary that the water should be held in some receiver*; but the vessel does not in any way slake the thirst. Yet the vessel is cause of the retention of the water; and a man's intellect in a normal state is cause of his thoughts. There is a special sort of condition, which is called by the School *removens prohibens*; for it is a condition of the action of a cause under certain circumstances, that some impediment which hinders or impedes that action should be removed out of the way. Thus, *the weights in Attwood's machine* could not function, so as to

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illustrate the law of gravitation, if the action of the gravitating force upon them were prevented by the check of some intervening ring, or if the cords became entangled in a part of the frame. Here again, the releasing of weight or cord is cause of the free action of the weight, but not of its motion downwards. St. Thomas, following the teaching of Aristotle, calls this condition a cause by accident (*causa per accidens*)[1]. He explains this term in a passage which gives us a clear insight into its meaning. 'A primary agent,' he writes, 'is said to produce an effect both absolutely and by accident. It is said to effect a thing absolutely, which it effects by its own proper form; accidentally, that which it effects by removing an obstacle. Thus, the sun absolutely enlightens a house; but he who opens a shutter which was an obstacle to the light,' accidentally'[2]. Now, though it may be permitted to say colloquially, that a man who unfastens the shutters or draws back the curtains gives light to the room; it is certain that the agency of the man is limited to the act of unfastening or drawing back, and that the lighting up of the room is due to the action of the sun. Wherefore, an accidental cause is no cause at all of the effect of which it is said to be cause by accident; although it is cause of the removal of an impediment to the production of that same effect by another cause. *An occasion*, when not confounded with *a condition*, is neither sufficient nor necessary for the production of the effect; but merely contributes towards rendering the production more easy or more perfect. Thus, for instance, it is well to seize *the occasion of a bright, sunny day for taking a photograph;* though it could be taken when the sky is cloudy. A *condition sine qua non* is a condition in the absence of which the production of the effect is naturally impossible. Thus, light is a *condition sine qua non* of reading or writing. Conditions not of this class are such as are, morally speaking, necessary to the production of the effect; as, for instance, *pen, ink, and paper, for writing*. Absolutely, one could write with chalk on a wall.

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[1] 1-2ae. lxxvi, 1, *c.*; lxxxv, 5, *c.*; lxxxviii, 3, *c.*

[2] 'Agens autem principaliter dicitur agere aliquid et per se et per accidens; per se quidem quod agit secundum propriam formam, per accidens autem quod agit removendo prohibens; sicut per se quidem illuminat domum sol, per accidens vero qui aperit fenestram, quae erat obstaculum lumini.' *Ma. Q.* ii, *a.* 11, *c.*

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PROPOSITION CXXXVI.

Causal influx, or causality, considered as something real in the effect, is a mode of imperfect existence or without intrinsic and absolute necessity, which is called dependence; by virtue of which an entity exists after such a manner, that it could not exist without the active influence of a Cause; but, that influx of the Cause once given, not only can, but does actually exist.

The truth, as well as meaning, of this Proposition are so manifestly contained in the enunciation and declaration of the preceding, that any exposition would be a waste of time. For its realization we must await the discussion on particular causes.

PROPOSITION CXXXVII.

Causality, as it is in the cause,—in other words, active causal influx,—is really distinct from the predicamental relation of the Cause to its effect; and, in like manner, passive causal influx,—that is to say, causality as it is in the effect,—is really distinct from the predicamental relation of the effect to its Cause.

The two Members of this Proposition may be considered as one in the declaration; because the same arguments, *servatis servandis*, equally establish both. Wherefore,

I. Between those entities, one of which can really exist without the existence of the other, there exists a real distinction. But the cause can exist as cause of the effect and the effect can remain as effect of the cause, so that the relation continues, without actual causal influx active or passive. Therefore, the relation of cause to effect and that of effect to cause are really distinct from the causality. *The Major* is axiomatic. *The Minor* is proved by experience. For in animal generation the parents remain parents of their offspring, when all actual causal influx has ceased; and, in like manner, the offspring remain offspring of the parents under the same circumstances. So, heat remains in the bed, long after the warming-pan has been taken away to the kitchen. Moreover, (but this confirmation holds good of *active* causality alone), causality may exist really, though potentially, in the cause, long before the production of the effect; nay, even though the effect should never be produced. Thus, *a plate of glass has the power of generating electri-*

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city; although, as long as it is in existence, it may never be put to such service. So, *a grain of corn has the power, let us say, of producing wheat;* although, because it has been ground down to flour, it is for ever prevented from producing its natural effect. Nor can it be justly urged that, in such cases, there is a potential effect as well as a potential Cause. For who does not perceive that the use of the word *potential* is here amphibological? As applied to Cause, the potentiality is subjective and real; as applied to the effect, it is objective and purely conceptual. With much greater show of reason might it be objected, that potential causality is not actual causality; and that it is manifestly with the latter that the present Thesis has to do. This, indeed must be granted; yet the concession does not impair the value of the confirmation. For the actual influx is but the act of the faculty or power; if, therefore, the potentiality is absolute and entitatively independent of all relation, there is every reason to conclude that its act is in its entity equally free.

II. That reality which is necessarily presupposed as foundation of a real relation, must be really distinct from that relation. But actual Causality is necessarily presupposed as foundation of the relation between cause and effect. Therefore, etc. Again: That reality from which a relation really results, is really distinct from the said relation. But Causality is the reality from which results the relation between cause and effect, as likewise that between effect and cause. Therefore, etc. To explain:—Two things are required for predicamental relation; to wit, a real foundation, and the actual position of the term or correlative. Where these exist, the relation at once arises. These two prerequisites, therefore, are naturally prior to the relation; and, if naturally prior to it, are really distinct from it. St. Thomas confirms and elucidates this argument in an Article where he is engaged in maintaining, that every finite entity must necessarily have been created by God. Against the truth of this proposition he supposes the following difficulty to be urged: 'There is nothing to hinder our discovering an entity destitute of that which forms no part of its essence; as, for instance, a man who is not white. But the relation of effect to cause does not seem to belong to the essence of entities; because some entities can be conceived without it. Therefore, they can exist without it.' To this objection the Angelic Doctor makes the following reply: 'Though relation to a cause does not enter into the definition of an entity that has been caused, nevertheless, it follows as a property upon what

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belongs to its essence: because, from the fact that an entity is being by participation, it follows that it must have been caused by another. Hence, such an entity cannot exist without being caused; just as a man cannot exist without being capable of laughter [1].' This, then, in sum is the argument of St. Thomas. Granted, that *to have been caused* does not enter into the definition of finite being; still it follows as a property from the essence of such being, just as *visibility* follows as a property from the essential nature and definition of man. For finite being is essentially being *by participation*. But if being is participated, it must be *by communication from another*. Thus the foundation being established and the term, (which is in this instance the Cause); the predicamental relation of cause and caused, (otherwise, effect), immediately arises as a property of all finite being.

SUMMARY.

Thus far we have seen, that between a Cause and its effect there exists a predicamental relation; that, consequently, there is a real distinction between the two; and that the relation in the Cause is really distinguished from the relation in the effect. We have further seen that the Cause is necessarily prior in nature, though not necessarily in order of time, to its effect; yet that Cause, in its second or perfected act, must be synchronous with its effect. Again; we have seen that causality, whether active or passive, is really distinct from the accompanying relation. Lastly, we have determined what causality is in the Cause, and what it is in the effect. It follows from all which has been said, that the word *Cause* is univocal; and that, in consequence, there is one corresponding formal as well as objective concept. Wherefore, the general properties that have been enucleated during the course of this Article, apply equally to all kinds of causes properly so called.

[1] '[Videtur quod non sit necessarium omne ens esse creatum a Deo.] Nihil enim prohibet inveniri rem sine eo quod non est de ratione rei; sicut hominem sine albedine. Sed habitudo causati ad causam non videtur esse de ratione entium, quia sine hac possunt aliqua entia intelligi. Ergo sine hac possunt esse: ergo nihil prohibet esse aliqua entia non creata a Deo.'

'Ad primum dicendum, quod licet habitudo ad causam non intret definitionem entis quod est causatum, tamen consequitur ad ea quae sunt de ejus ratione: quia ex hoc quod aliquid per participationem est ens, sequitur quod sit causatum ab alio. Unde hujusmodi ens non potest esse quin sit causatum, sicut nec homo quin sit risibilis.' $1^{a^{e}}$ xliv, 1, 1^{m}.

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There is an animadversion which may possibly be made upon the doctrine here delivered; and it would be unwise to pass it over in silence. It may be said that, when we arrived at the crucial question touching the intimate nature of the causal influx, the problem was dismissed with a vague and insignificant declaration, that causality in the Cause is something necessary and sufficient for the existence of the effect; and that, in the effect, it is a mode of imperfect or dependent existence, by virtue of which the Cause is necessary and sufficient for the existence of the effect. But this tells one nothing; for it is already precontained in the primitive notions of Cause and effect. But that which one desiderates to know is, the precise nature of this same causal influx. What is the said necessity and sufficiency on the one side, and the dependence on the other? While denying that the declarations referred to are vague and insignificant, seeing that they serve to distinguish *Cause* from other cognate concepts; it must be owned that the exposition is markedly general. But how could this be avoided, when we are considering causes and causality in general, by way of introduction? The general idea of causal influx it is very difficult to describe, without incurring the danger of obscuring the simplicity of the concept, and of confounding *general* with *particular* causality. This latter, which is easier to realize, will be discussed in its place under each separate species of cause.

ARTICLE III.

Division of Causes.

PROPOSITION CXXXVIII.

The commonly received division of Causes into the Material, Formal, Efficient, Final, is true and adequate.

The present Thesis will be seen to contain two Propositions; viz. that the alleged division is *true*, then that it is *adequate*. The former Proposition resolves itself into two; viz. that the members of the division really exist, and that they exist *as* true causes. Adequacy of division postulates three things; viz. distinction and opposition between the several members;—that the members collectively should not exceed, or fall short of, the divided whole, i.e. that they should not be too many, or too few;—and, thirdly,

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as a complemental perfection, that the division should be immediate, i.e. not resolvable into a higher and more simple division. Hence, the proof will consist of five parts.

I. THE ENUMERATED MEMBERS OF THE DIVISION REALLY EXIST IN NATURE.

Daily experience proves that each one of them exists in nature. Let us take, by way of illustration, a fact of every day occurrence amid other innumerable instances derivable from the perpetual changes, the alternate generations and conceptions, in the visible universe. Let us put ourselves in presence of a young bird that has just broken through its shell. It is evidently made out of something; and,—not to go too deeply into the physical part of the question,—in one way or another it is made out of the yolk of the egg. Here is *the Material Cause.* But how is it that the yolk, or any given part of the yolk is specifically determined to this particular bird,—say, a thrush, with its wings and other members, its speckled breast, its life and power of song? That which so determines the matter to be a *thrush*, and not a *duck* or *bullfinch* or *blackbird* or other winged thing, is *the Formal Cause.* Again: That yolk, containing within itself the power of such specific development, claims some external origin. It did not drop from the clouds. Whence did it come? From the hen-bird. The parents, then, are *the proximate efficient cause.* But the whole process of generation, gestation, incubation, is subject to an unvarying physical law, i.e. to a stable order established by the Wisdom and Will of the Supreme. He, therefore, is *the First Efficient Cause.* But, Himself infinitely wise and infinitely prudent, He does not act at random. Why, then, did He arrange for a constant succession of these thrushes? Various ends doubtless He had in view; some of which we know. Among these, let us say that *to afford pleasure to His rational creature* was one. Here we are in presence of a *Final Cause.* Take another instance from art. A sculptor has executed a piece of statuary. The Material Cause of the statue is the block of marble out of which it was chiselled. The Formal Cause is the figure, features, drapery, etc., given to the stone by the labour and skill of the artist. The Efficient Cause is the sculptor himself. The proximate Final Cause is the idea or likeness intended; the remote Final Cause, devotion, fame, money, or whatsoever other motive, according to the mind of the sculptor. To throw these

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thoughts into a somewhat more scientific form: To the constitution of a new material substance four things are naturally requisite;—something out of which it may be formed, something to give to it its specific nature, somebody or something to bring it into existence, and an end or purpose in its production. But the first is the Material, the second the Formal, the third the Efficient, the fourth the Final Cause. Therefore, etc. The *Major* is proved as to each of its Members. For,—somewhat to change the order adopted in the illustration,—a new bodily substance requires some being external to itself for its production; since it cannot produce itself. How could it do so, when it was nothing before it was produced? Moreover, every-day experience convinces us that, in each instance of generation or new production, there is an agent sufficient to account for it. But the Efficient Cause produces the entity either out of nothing, or out of something that is presupposed to its causal action. The former would be a creative act, which is utterly unknown to sensile experience. That something, then, which is presupposed and out of which the new substance is formed, is the Material Cause. Thirdly, in order that the said entity may be *new*, it is necessary that the Efficient Cause should communicate, introduce, something into the pre-existent matter, by which the entity becomes *this thing* specifically. That something is the Formal Cause. Lastly, since Efficient Causes are not supposed to act senselessly or at random, (since either they are intelligent beings themselves or are directed by an Intellect Who has prescribed their natural operations); they must have a purpose or end in that which they effect. This is the Final Cause.

II. These four Members of the division are true causes, according to the description of a cause given in the preceding Article.

About the first three, viz. the Material, Formal, and Efficient Cause, there can be little or no doubt. For, *a*. The Material Cause is that reality out of which the complete bodily substance is formed; and it intrinsically enters into its constitution. It, therefore, really communicates itself; and communicates itself to an entity really distinct from itself. For the complete substance is a distinct being from the simple matter. Thus,—to revert to a former example,—no one will venture to dispute that the marble block enters intrinsically into the constitution of the statue, gives to it a part of its

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entity; nor can it be doubted that the complete statue is an entity really distinct from the shapeless, untouched stone. *b.* The Formal Cause is that reality in the complete bodily substance, which gives to it its proper being, or essential nature. For matter is, so to say, the mere inchoation of its being; while the Form perfects it and gives to it its specific determination. Further: It enters intrinsically into the constitution of the entire substance, communicating its own being to an entity really distinct from itself. For the form or outlined figure, in and by itself, is not the statue, or the marble; a proof of which is, that the marble originally existed without it, and that the image might have been made of plaster of Paris, or Bath-stone, or wax. An objection might possibly be made to this illustration, that the figure or shape given to the marble is accidental, not substantial; for it comes and goes without any change in the substance of the stone. And it is true that it is not the substantial form of the stone; but it is, so to say, the substantial form of the *statue*. The illustration was taken from art. Nevertheless, the objection affords an opportunity of here inserting a caution. It is true that the exposition of the present Proposition has embraced material substance and its substantial constituents only. But there are the same causes at work in accidental composition. Moreover, with the single exception of the Material Cause, all these causes are to be found in the constitution of spiritual substance; and even the Material Cause, though it does not enter into their constitution, still finds a place there after a manner in accidental information. There are two causes, then, which contribute their partial entity to the constitution of bodily substance. Both are principiants communicating being to an entity really distinct from themselves, yet together constituting that entity. Therefore, they are true and proper causes. *c.* There can be just as little doubt touching the true causality of the Efficient Cause; for, by its own energy, it makes that entity to be, which before was not, and the production of that entity is the formal term of its action. No one would be mad enough to maintain, that the sculptor does not make the statue; or that the entity of the statue is not distinct from his own. Indeed, the definition of cause specially squares with the activity of the Efficient Cause; because, in the instance of efficient causation, not only is the entity of the effect really distinct from that of the cause, (for this is common to all the causes), but the entity communicated by the causal influx is something really

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distinct from the cause. *d.* The Final Cause is the only one of the four that can raise any difficulty. It does seem, at first sight, hard to understand, how an intention,—a mere logical entity,—can claim reality sufficient to justify us in assigning to it a real causality, that is to say, a real communication of being to an entity distinct from itself; and how that which is an *end* can be a *beginning*, i.e. can have that priority of nature which is the essential property of a cause. This question must await its discussion and solution in the fifth Chapter of the present Book. Suffice it here, therefore, to observe very briefly that the purpose or intention, *as thought*, is a real entity though accidental and, as such, capable of energy; and that the end or purpose, though last in execution, is first in intention. That the object, (as we are often accustomed to call it in English), or the end, does really move the Efficient Cause to action, and not only so but modifies the operation itself, is patent to ordinary observation. Take an ordinary instance. An artist, we will suppose, either is himself a political partisan or is engaged to illustrate some comic paper that is secured for a particular party. He draws a likeness of some obnoxious statesman whom *he intends* to caricature. The sketch is made. The likeness of the man is there, of course; but so travestied, partly by exaggeration of peculiarities in feature, form, dress, partly by some singularity of posture, occupation, or surroundings, that no one,—probably not even the victim himself,—can help laughing. This was the purpose of the caricaturist, who was aiming at this effect in every line of his portrait. Who would venture to say, that this end or intention has not, in some way or another, communicated a certain being or reality to the cartoon? The above example has the advantage of including under one and the same end the intention of the artist's operation and the intention likewise of his completed work. The former is the sketch which he has conceived; the latter, the motive which suggested the conception.

III. THESE FOUR CAUSES ARE SUFFICIENTLY DISTINCT FROM, AND OPPOSED TO ONE ANOTHER RESPECTIVELY; CONSEQUENTLY, IN THIS RESPECT THE DIVISION IS A TRUE ONE.

The above assertion is thus proved. Four Causes,—two of which contribute *intrinsically*, the other two *extrinsically*, to the constitution of the effect: while of the two that contribute intrinsically, the one does so after the manner of a purely passive receptivity, the

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other after the manner of a determining act; and of the two that contribute extrinsically, the one does so by a physical, the other by an *intentional* (i. e. intellectual) influx,—are sufficiently distinct from, and opposed to, one another. But, in the division here contended for, the Material and Formal Causes contribute intrinsically to the constitution of material substance, but the former as a purely passive receptivity, the latter as a determining act; while the Efficient and Final Causes contribute intrinsically to the same effect, but the former by a physical, the latter by an intentional influx. Therefore, etc. *The Major* is in itself evident; and any obscurity that may arise from the newness, to some, of this portion of Scholastic teaching will be dissipated, (one may hope), partly by the declaration of *the Minor*, partly by the exposition of that teaching which will be given at length in subsequent Chapters. *The Minor*, then, is thus declared. The Material and Formal Causes are distinct from, and opposed to, the Efficient and Final, in that the former essentially enter into the constitution of the effect by the joint contribution of their respective entities to the result; that is to say, they are inside the composite substance of which they are the two constituent parts. On the contrary, the Efficient and Final Causes are outside the composite substance,—or, more generally, the effect; though they really contribute to its production. Thus,—to go back to our old illustration,—*the marble* is a real, intrinsic constituent of *the statue*; and so is *the figure impressed*, or rather expressed, on the marble. But neither *the sculptor* nor *his intention* enters inside the work of art. Again: The Material and Formal Causes are reciprocally distinct and opposed; because the former is purely passive, indeterminate, inchoative, while the latter is active, determinating and determinate, perfective. The block of marble, *regarded exclusively as material cause of the statue*, is purely passive and receptive. It is submissive indifferently to any form whatsoever which the sculptor may think fit to give it; and it is equally receptive of all possible forms. It is indeterminate. Art may make anything out of it,—*slab*, *column*, *crocket*, *basso-relievo*, *statue*, etc. It is inchoative; for, though absolutely necessary for attempting the piece of sculpture, it exhibits the rudest and most undefined beginning. The form, on the other hand, which the sculptor impresses, reduces the submissive receptivity of the block to act; that is to say, it makes the block to become actually something definite. By so doing, it determines the marble to one

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representation, (say, of *Moses*); and, for so long as it remains, excludes it from either any other representation or different kind of service. Finally, it perfects the whole *as a statue*, (which may stand for the specific nature); and as *the statue of Moses*, (which represents its individual actuation). In like manner, the Efficient and Final Causes are mutually distinct and opposed. For the Efficient Cause *physically* communicates being to the effect, as one perceives very clearly in the generation of living things; while the Final Cause does so only *intentionally*, as has been already said. Thus, the sculptor, by means of his tools, works into the marble and produces out of it by physical action the required figure. But his aim or intention,—if it be the end of his labour, viz. the expression in the marble of the chosen subject,—does not physically act upon the block, though it intellectually guides the hand; if it be the end or purpose of the work itself, *that* neither acts upon the stone nor breathes in the accomplished piece. No one could discover from the statue, whether it were an effort of patriotism, or of devotion, or made for fame or for money.

IV. THE DIVISION IS ADEQUATE; THAT IS TO SAY, THERE ARE NO OTHER CAUSES WHICH CANNOT BE REDUCED UNDER ONE OR OTHER OF THESE FOUR SPECIES.

This Enunciation is plainly enough a negative Judgment. It is a proverbial expression that you cannot prove a negative. Wherefore, anything like direct demonstration is not to be expected. There are, however, two ways of establishing its truth. The one is indirect, and consists of a challenge to any who cast a doubt upon it, to bring forward any one instance of an acknowledged cause, which cannot fairly be ranged under one or other of the kinds here enumerated. Till they can do so, it is fair to conclude that the division is adequate. Two instances have, indeed, been objected, viz. *physical dispositions of matter, and the exemplar cause.* As to the former, they are evidently reducible under the Material Cause; as to the latter, the solution is more difficult, and the question will, therefore, be discussed later on. Enough to remark here, that the difficulty does not attach so much to the reduction itself, as to the particular cause under which the exemplar should more fittingly be ranged. As this indirect argument may not appear satisfactory to some, an appeal is made to *authority*. And this is the second confirmation of the truth of the Enunciation now

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under consideration. In order to forestall a possible objection, it may be expedient to advise the reader that, while authority (whose evidence is purely extrinsic) cannot, as a rule, be admitted in science or scientific inquiry, for the very simple reason that science is based on intrinsic evidence; nevertheless, in questions of intricacy wherein the evidence does not shine in upon us, and signally in matters of order and division, the consentient judgment of the wise has a just claim to our attention and sometimes commands our assent. It may assuredly be appealed to with safety in the present instance; and it is not too much to say, that the entire School has accepted the present division which it has received from Aristotle. This greatest of philosophers proposes, or alludes to it, in various places up and down his works. Two of these places shall be quoted. 'Now, there are four kinds of causes given,' he writes. 'One of these we affirm to be the substance and essence, (for *the wherefore* [of a thing] is traced up to the ultimate determining reason, and *the primary wherefore* is a cause and principiant'). The Philosopher calls the form the substance or essence of an entity, because it ultimately determines the specific nature by an intrinsic actuation. Hence, it is the ultimate determining reason, —*the Difference* in the definition. 'Another is the matter and subject. A third is the source of the beginning of motion. The fourth, which is a cause antithetical to the last mentioned, is *the reason why*, and the *good;* for this fourth is the end of all generation and motion[1].' Again in another place he says: 'In one wise, that is denominated a cause, out of which a thing is intrinsically produced; as, for instance, the brass of the statue, and the silver of the cup, and their *genera*. After another way, the species and exemplar. Now, this is the determining reason, or definition, of the essence; which may be said likewise of their *genera*.' Here, for the better understanding of the text, it is necessary to interpose two observations. As St. Thomas remarks, in his commentary on the passage, the Formal Cause is here compared with its effect under a twofold aspect: as its intrinsic form, and then it bears the name of species; as extrinsic

[1] Τὰ δ' αἴτια λέγεται τετραχῶς, ὧν μίαν μὲν αἰτίαν φάμεν εἶναι τὴν οὐσίαν καὶ τὸ τί ἦν εἶναι, (ἀνάγεται γὰρ τὸ διὰ τί εἰς τὸν λόγον ἔσχατον, αἴτιον δὲ καὶ ἀρχὴ τὸ διὰ τί πρῶτον), ἑτέραν δὲ τὴν ὕλην καὶ τὸ ὑποκείμενον, τρίτην δὲ ὅθεν ἡ ἀρχὴ τῆς κινήσεως, τετάρτην δὲ τὴν ἀντικειμένην αἰτίαν ταύτῃ, τὸ οὗ ἕνεκα καὶ τἀγαθόν· τέλος γὰρ γενέσεως καὶ κινήσεως πάσης τοῦτ' ἐστίν. *Metaph. L. I, c 3, init.*

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to it,—a pattern in the likeness of which the effect is made,—and then it is called the Exemplar. The second observation is this: *Genera*, though they assume the place of a Material Cause, as it were, in the definition of their species, are themselves really forms. Thus, *animal* is a determinate essence; and, though in the definition of *man* it stands for the genus, nevertheless, it is obviously a part of human essence. The Material Cause is only virtually contained in the definition. Aristotle proceeds with certain illustrations: 'As, the relation of two to one in the diapason, and number simply, and the parts in the definition (or determining reason). Thirdly, the source of the first beginning of motion or of rest; as, for instance, he who has given counsel is a cause, and the father is cause of the child, and in general, he who makes is cause of that which is made, and he who effects a change is cause of the change effected. Finally, as the end. And this is *the reason why*; as, for instance, health is the reason why one takes exercise. For why does one take exercise? We answer, for the sake of health; and, making that reply, we think that we have assigned the cause[1].' The Philosopher gives the same division, but with more elaboration, in the second Book of his *Physics*, the third and following Chapters. St. Thomas often introduces it in that incidental and matter-of-course way, which is so strikingly indicative of something long established and universally admitted. Two instances in particular have been selected, because they likewise serve to elucidate one or two points connected with the present inquiry. 'Now, there are four Causes in all,' he writes. 'Of these two,—that is to say, the Material and Efficient,—precede the effect, according to their intrinsic entity; the Final too, though not in entity, yet in intention. But neither way does the Formal Cause precede, in so far as it is the form. For, since the effect has its being by means of the form, the being of the latter is simultaneous with the being of the effect. But, inasmuch as it is also the end;' in this respect 'it precedes in the intention of the agent. Now,

[1] Αἴτιον λέγεται ἕνα μὲν τρόπον ἐξ οὗ γίγνεταί τι ἐνυπάρχοντος, οἷον ὁ χαλκὸς τοῦ ἀνδριάντος καὶ ὁ ἄργυρος τῆς φιάλης καὶ τὰ τούτων γένη, ἄλλον δὲ τὸ εἶδος καὶ τὸ παράδειγμα· τοῦτο δ' ἐστὶν ὁ λόγος τοῦ τί ἦν εἶναι καὶ τὰ τούτων γένη, οἷον τοῦ διὰ πασῶν τὰ δύο πρὸς ἓν καὶ ὅλως ὁ ἀριθμὸς καὶ τὰ μέρη τὰ ἐν τῷ λόγῳ. ἔτι ὅθεν ἡ ἀρχὴ τῆς μεταβολῆς ἡ πρώτη ἡ τῆς ἡρεμήσεως, οἷον ὁ βουλεύσας αἴτιος, καὶ ὁ πατὴρ τοῦ τέκνου, καὶ ὅλως τὸ ποιοῦν τοῦ ποιουμένου καὶ τὸ μεταβλητικὸν τοῦ μεταβάλλοντος. ἔτι ὡς τὸ τέλος· τοῦτο δ' ἐστὶ τὸ οὗ ἕνεκα, οἷον τοῦ περιπατεῖν ἡ ὑγίεια. διὰ τί γὰρ περιπατεῖ; φαμέν, ἵνα ὑγιαίνῃ, καὶ εἰπόντες οὕτως οἰόμεθα ἀποδεδωκέναι τὸ αἴτιον. *Metaph. L. IV (aliter V), c. 2, init.*

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although the form is the end of operation, to the attainment of which the operation of the agent is limited; nevertheless, not every end is a form. For there is a certain end of the intention over and above the end of the operation; as is plain in the instance of a house. For the form of the house is the end that terminates the work of the builder. Nevertheless, his intention does not stop there; but' (extends) 'to an ulterior end, which is a dwelling. So that it may be stated thus: that the end of the operation is the form of the house; but the end of the intention is a dwelling [1].' Again, elsewhere St. Thomas writes: 'There are four kinds of Causes, viz. the Final, Formal, Efficient, and Material; *to which is also reduced the disposition of the matter,* which is not a cause absolutely, but from a special point of view [2].' The former of these passages contains an observation, to which the attention of the reader is particularly invited; for it will be of great service later on. St. Thomas affirms that the introduction of the form is always the end, or purpose, of the operation of the efficient cause. It will not escape notice that, in the second passage, he solves the difficulty touching the disposition of the matter in the way already suggested.

V. THE DIVISION IS IMMEDIATE; THAT IS TO SAY, THERE IS NO HIGHER AND SIMPLER DIVISION UNDER WHICH THE AFORE-NAMED CAUSES CAN BE CONVENIENTLY REDUCED.

This property of immediateness, though doubtless a perfection, is not absolutely necessary to a good division. The question might safely, therefore, have been omitted. But, as it is clearly the opinion both of Aristotle and St. Thomas, that the present division is immediate, while Suarez defends the opposite opinion; it may be worth while to state the reasons why the author prefers the teaching of the

[1] 'Causae autem sunt quatuor; quarum duae, scilicet materia et efficiens, praecedunt causatum secundum esse internum; finis vero etsi non secundum esse, tamen secundum intentionem; forma vero neutro modo, secundum quod est forma; quia cum per eam causatum esse habeat, esse ejus simul est cum esse causati; sed inquantum etiam ipsa est finis, praecedit in intentione agentis. Et quamvis forma sit finis operationis, ad quem operatio agentis terminatur, non tamen omnis finis est forma. Est enim aliquis finis intentionis praeter finem operationis, ut patet in domo. Nam forma ejus est finis terminans operationem aedificatoris; non tamen ibi terminatur intentio ejus, sed ad ulteriorem finem, quae est habitatio; ut sic dicatur, quod finis operationis est forma domus, intentionis vero habitatio.' *Po*^{a}: *Q.* iii, *a.* 16, *c.*

[2] 'Est autem quadruplex genus causae; scilicet finalis, formalis, efficiens, et materialis, ad quam reducitur etiam materialis dispositio, quae non est causa simpliciter, sed secundum quid.' 2-2^{ae} xxvii, 3, *c.*

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former to that of the latter. Suarez maintains that one higher and immediate division would be into *internal* and *external* causes; of which the former include the Formal and Material, the latter the Efficient and Final Causes. For, as he argues, since the two first-named jointly contribute by an intrinsic influx to the constitution of material substance, they may reasonably be concluded under that common characteristic which distinguishes them from the other two whose causal influx is extrinsic. But higher and more marked still is the division, he tells us, into causes which communicate being to the effect by real physical causality,—to wit, the Efficient, Formal, and Material; and the Final Cause which communicates by an intentional influx. But it strikes one at once, that this proposed double division furnishes a sufficient reason for rejecting both. For, if there is so marked a difference between the causality of the Formal and Material Causes on the one hand, and the Efficient on the other, as to justify their separation in the former division; with what verisimilitude can we consent to their conjunction in the latter? On the other hand, if there is so fundamental a distinction between the Efficient and Final Causes as to require their separation in the latter division; how comes it that they find themselves together in the former? The two divisions destroy each other. Then again, St. Thomas, in the first of the two passages quoted above, introduces another equally grave distinction, by virtue of which he includes under one, as it were, the Material, Efficient, Final, for the reason that they precede the constitution of the effect; while he signalizes the Formal Cause as the only one which is necessarily simultaneous with the effect. In a somewhat similar manner, the Material Cause might be isolated from the other three, because it is most imperfect, inchoate, indeterminate in the order of being; while the remaining three are *in themselves* perfect, determinate. Does not this possibility of varied divisions, in which the same causes are now separate, now conjoined, point to the fact, that there is so solid a foundation of distinction from the rest in each, as to forbid of higher reduction, and to fully justify us in considering this division into four, immediate?

COROLLARY.

It follows from the several declarations included under this Proposition, that there is nothing to prevent one and the same entity from exercising the functions of more than one cause relatively to different effects. There is, consequently, no necessity in all cases for

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a real or material distinction between the four Causes. For the same form, as Suarez appositely remarks, is the end of generation or production, is the substantial form of the human body and of man himself, is the Efficient Cause of locomotion, and is Material Cause of its own properties of thought and volition. In like manner, quantity is an accidental form of matter, joint Material Cause of qualities, Efficient Cause of ubication. The reason of this fact is clear. For, though there is diversity between the causality of the causes, there is no repugnance or incompatibility. It is for a like reason that the same entity may resemble one and have no resemblance to another,—may be shorter than one, taller than another,—be simple in comparison with one, complex in regard of another. For actual causality connotes a relation; and a relative changes the nature of its relation with a change of correlative; as the same man is son of one and father of another and brother of a third. But what is to be said as to the possibility of one and the same entity exercising different species of causality in relation to one and the same effect? From what has been hitherto established, it is easy to draw the conclusion that such a combination of causal action is not impossible; for the delineation or figure in the piece of sculpture is at once its Formal and Final Cause. But is the possibility general? or does it admit of exceptions? Manifestly there is one exception. The same entity cannot be at once Material and Formal Cause to the same effect. The reason is, that there is sufficient opposition between the two to render such a combination impossible. The one is purely passive, the other act; the one is indeterminate, the other determinating; the former perfected, the latter perfecting. Consequently, a real distinction must always intercede between the Formal and the Material Cause of the same entity. The same must be said of the Formal and the Efficient Cause of the same entity. For the former is intrinsic, the latter extrinsic, to the effect; and the form is term of the action of the Efficient Cause, or intentionally presupposed as the motive of its operation. Neither can the Efficient and Final Causes meet in the same entity relatively to the same effect; that is, understanding by Final Cause that which, in accordance with the more ordinary acceptation of the word, it has been described to be. The reason is, that the End is the formal term of the causal action of the Efficient Cause. In a certain sort, the Material and Final Causes may be found in the same entity relatively to the same effect. For the same bodily substance is at once Subject, or Material

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Cause of accidents and, after a manner, their end; for the perfecting of the substance is the immediate purpose of the accidents. Finally, the form is not the Final Cause of the composite; on the contrary, the composite rather is the Final Cause of the form. But it is the end of operation or generation; and in this sense only can the Formal and Final Causes meet relatively to the same effect. It is now only left to add, that in different orders of causality, an entity may be at once cause and effect relatively to one and the same being. St. Thomas calls attention to this fact, and illustrates it by an example. 'It comes to pass that, according to different genera of causes, the same entity relatively to the same is a cause at once and effect; as, for instance, purging is cause of health in the genus of Efficient Cause; while health is the cause of purging in the genus of Final Cause. In like manner, matter is in a certain sense cause of the form, in that it sustains the form; and the form is after a sort cause of the matter, in that it gives actuation to matter[1].'

NOTE.

Suarez, in connection with this discussion touching the division of causes, has introduced to our notice the *objective cause*, as it is called; which is no other than the object in its relation to faculty or act. Thus, for instance, a certain object moves the intellect to know it, and known, moves the will to desire it. As such, it is evidently object of each *faculty*. Let it now be *de facto* known and possessed, it becomes object of the *act* of each faculty. To which of the members of the above division is the said causality referrible? To answer briefly:—As object of the intellectual faculty, it exercises by means of its *intelligible species*, or intentional form, the office of an Efficient Cause. As object of the appetitive faculty, that of a Final Cause. As object of the act, whether intellectual or appetitive, it would seem as though it exercised no causality, properly so called; but it is to be regarded simply as the term of motion. Such is the conclusion of Suarez, whose *Disputation* (the twelfth) on the subject of this Article may be consulted with profit. The writer in this, as in many other parts of the present work, has largely profited by the labours of that illustrious philosopher and theologian.

[1] 'Contingit autem secundum diversa genera causarum idem respectu ejusdem esse causam et causatum; sicut purgatio est causa sanitatis in genere causae efficientis, sanitas vero est causa purgationis secundum genera causae finalis. Similiter materia causa est formae aliquo modo in quantum sustinet formam; et forma est aliquo modo causa materiae in quantum dat materiae esse actu.' *Verit.* Q. xxviii, a. 7, c.

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CHAPTER II.

THE MATERIAL CAUSE.

INTRODUCTION.

No educated man will be tempted to dispute the fact already signalized in the Introduction to the first Volume, that the Peripatetic, or Scholastic, Philosophy has for a century or two past become, more particularly in this country, a general object of distrust and, not unfrequently, of impatient scorn; most especially among those who have devoted themselves to physical investigation. It might appear invidious to suggest, that this hostility is principally due to prejudice and want of acquaintance with the science of metaphysics; yet it would be hopeless to introduce the subject awaiting our consideration to the attention of the reader with any prospect of success, unless we are allowed to prefer and, to a certain extent, justify this indictment. For the Scholastic teaching touching Primordial Matter is one which, in quite an exceptional manner, has been a target at which the shafts of adversaries have been directed. Nay, it has encountered determined opposition from those even who in other respects have taken the old philosophy under their protection, according to their lights. This is not the place for a general inquiry into the apparent foundation and latent causes of such a prejudice; though much might be said about both. Yet, there is one reason for it, whose persistence would block the way against any chance of progress in our forthcoming investigation; and effort must be made to remove it out of our road, unless even demonstrative conclusions are to prove a sterile labour. This reason resolves itself into a practical confusion of the respective spheres of metaphysics and physics. When we say this, it is not meant that metaphysics should have no directive influence over

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physical investigation, after the manner explained in the first Book; nevertheless, the respective spheres are, and ought to remain, totally distinct. Hence, the physical disciplines are entitled to perfect liberty within their own proper sphere; and the same should *à fortiori* be allowed to the mathematical science. It is the special province of the former to investigate sensile phenomena and by careful observation and experiment to reveal the order, in other words, the laws of nature by which these phenomena are governed; while the latter has for object, *intelligible matter*,—or the unchanging laws, or forms, of quantity. Within these limits thus formally defined, metaphysics has neither wish nor call to enter. But there is a region beyond, which it claims as its own. Underneath the phenomena of perception and that universal government of bodies which men call quantity, there are essences, and a supra-sensile hierarchy of truths. These are claimed by metaphysics as her own. It is no part of physics,—certainly, as at present understood and pursued,—to theorize on the essential constitution of bodies; but to experimentalize on the facts of nature. For her scientific process is exclusively inductive. The suggestion, indeed, of certain theories, or of ways of accounting for facts, or of laws so called of natural operation, *—germane to her special subject-matter and to be afterwards subjected to the test of experience,*—is part of her legitimate work; but if she oversteps the frontier, she is an intruder. To revert to the special subject proposed for present consideration, metaphysics begins where physical research ends. When the latter pursues its investigations touching the elementary parts or constituents of material substances, it is searching for such parts or constituents *as are capable of actual physical separation from each other*. If, for instance, you ask a scientific chemist what he understands by *a molecule*, he will tell you that it is *the smallest part of a body which can physically exist by itself*. If you further inquire what meaning he attaches to the term *atom*, he will reply that it is *the smallest quantity of an element, or simple body, which can enter into a compound or be driven from it*. The physicist, therefore, searches after *the physical ultimates* in the constitution of material substance; and here metaphysics would allow him the fullest liberty, with one solitary exception. She, as the supreme science, makes the proviso that no physical theory shall contravene her own immutable first principles. She could not, for instance, tolerate the Democritan theory of a fortuitous concourse of atoms; because it is in contravention

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of the principle of causality. She has nothing to object against atomic, dynamic, or any other physical theories, as far as they go; provided that they do not offend against, but are compatible with, those higher truths of which she is the sole guardian and expositor. This condition once recognized, let the experimentalist, the analyst, the observer, expatiate in their own fields at their good pleasure. All their contributions to knowledge will be valuable; and will be gratefully acknowledged by the queen of sciences, who will know how to make best use of them, by subordinating them to the unity of truth. But one thing there is that is simply intolerable, because it involves so manifest a subversion of philosophical order; and that is, all endeavour to construct a new metaphysics on the basis of physical theories. With greater show of reason might the mathematician cast aside all the laws and pure demonstrations of his science and build up a new algebra, at the bidding of some hitherto unobserved aberration in the motion of a celestial body, or because a conflict of causes has produced certain irregularities in the orderly working of an instrument. Who would not foresee the intellectual anarchy that must result from such misplacement? The only reason why the absurdity is not as patent in the former instance is, that metaphysical science, properly so called, is a *terra incognita* to the men of thought and of education in our day. That which goes by the name is a sorry amalgam of logic, ideology, and pyschology.

These introductory observations will serve to explain the reason why such a prejudice prevails against the Peripatetic doctrine touching Primordial Matter. When the metaphysician examines into the essential constituents of material substance, he has no eye to physically separable parts. On the contrary, he is free to admit that it is impossible physically to separate matter from form. They are, therefore, in a certain sense metaphysical rather than physical parts of which he treats. To put it more definitely,—they are *physical* constituents, *metaphysical* parts. Similarly, the chemist proposes to himself to discover the elements, or simple substances, which form the basis of all compounds, of nature organic and inorganic. The metaphysician sees that both elements and compounds are composites, and seeks for the essential constituents common to all. Let an example serve by way of illustration. In a drop of water there are many *diatoms*, which are only visible under a microscope magnifying, say, five hundred diameters.

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Select one of them. The body of this microscopic organism is composed of (speaking chemically, and without prejudice to any particular theory) a certain number of molecules; each one of which, again, is composed of atoms of composing elements. We ask of chemistry to supply us with one of these atoms. Let it be an atom of *carbon*, existing, as it ordinarily does, in a state of chemical combination with other elements. Isolate it; let it be in the structure of that *diatom*; that is to say, take it as an atom of carbon, but existent in that living structure. Let its value be represented by a fraction with twenty figures, if you will, in the denominator. Physical science has reached its ultimate. The metaphysical science takes up the inquiry. First of all, this atom of carbon is the atom of a diatom at present. It is, therefore, informed somehow or other with life. The diatom dies; but the atom of carbon remains,—speaking physically. It is not now what it was before. Virtue has gone out of it. Suppose, again, that, in the process of decay, it goes forth into the air in combination, is there seized upon by the grass after a process of decomposition, and enters into the substance of the grass. Thence we may trace it to a sheep; and thence to a human body which returns it, we will say, to the air. Thus much chemistry teaches me. But I go on to inquire: What is that which has been constantly changing, while the atom of carbon has remained *potentially* the same? Again: This atom of carbon is in combination with other elements, say, oxygen; so that out of the combination a new substance has arisen, in which the carbon only exists *potentially*. Chemical combination and mechanical mixture are two very different things; as one can see in the composition of *air* and *water* respectively. In the former, the atoms of the respective elements remain *in act* as they were according to their primitive constitution; in the latter, they exist only *potentially*. Well,—to revert to the original example,—in the supposed chemical composition what is that new something that has arisen, which is neither *carbon* nor *oxygen* but something quite different from either? Here, again, there is something or other which remains the same, and there is a differential. Both are essential to the compound. What are they? Lastly, take *the atom of carbon by itself exclusively*. We have not done with composition yet; though carbon is chemically called a simple element. For there is that in the said atom which is common to *iron*, *sodium*, *hydrogen*, and other elements, (otherwise, these would not have

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received the common name of *material substance*); and there is likewise that which distinguishes it from the rest. Therefore, it is composed, and has parts. But assuredly they are not *chemical* parts; for this atom is the ultimate of a simple body. They are not *integral* parts; for it is the supposed constituent of a molecule. What are they then? Such is the inquiry of metaphysics.

Now, it is notorious that, in the sensile order,—or rather in nature,—that which remains the same throughout these changes is never alone, but is always under some form or another. Not only so; but it appears before us as a mass under some geometrical or other form. *It extends itself* before our eyes in space. The minutest animalcules exhibit this extension, when rendered visible to the human eye beneath the microscope. Whether you divide a body physically to secure the molecule or decompose it chemically to obtain the atom of an element, it is always a complete substance of some sort; and quantitatively, it is indefinitely capable of division. You cannot possibly convert the *essentially* composite into the simple by physical division or chemical analysis. You will have body to the last; and body has extension, mass, composite essence. With material substance you began; and with material substance, after all your efforts, you must end. *An atom of hydrogen is as much hydrogen as a gallon of it; and the millionth part of a grain of calcium is as much calcium as a square foot of it would be.* Neither physical division, therefore, nor chemical analysis will help us to discover the essential constituents of bodily substance, *as such*. Essences are not patent to the senses; they are the object of the understanding. Now, it is these essential constituents of which we are in search. In the present chapter the inquiry is limited to that one of the two constituents which has received the name of the Material Cause.

To begin with, then:—Is there a Primordial Subject of all substantial changes in bodies? If so, what is its nature? Such are the questions proposed for discussion in the following Article.

ARTICLE I.

Primordial Matter.

Prolegomenon I.

The Material Cause is a cause really, though intrinsically, contributing to the composite being of bodily substance, as itself an

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incomplete substance determinable to such a kind of being. It is *extrinsically* thus determinable by the efficient cause; *intrinsically*, by another incomplete substance which is called the formal cause. Thus, for instance, the material cause of *a dog* is, loosely speaking, *its body*; the formal cause is *its soul*; the efficient cause, *its parents*.

Prolegomenon II.

According to a well-known division, Matter is divided into the *out of which*, the *in which*, and the *about which*. The same Matter is said to be *out of which*, relatively to the entire composite towards the constitution of which it contributes; as well as relatively to the substantial form which is evolved, or educed, out of it: *in which*, relatively to the substantial form in its state of union with it: *about which*, relatively to the efficient cause. Thus,—to continue with the same example,—*the body of the dog* is the Matter, (speaking again loosely), out of which its soul is evolved, in which its soul exists in union, out of which the complete composite is formed; lastly, the Matter about which active generation is concerned. When the substantial form is not evolved out of the potentiality of the Matter,—as in the case of man,—there is no Matter *out of which*, relatively to the form.

Prolegomenon III.

Matter *out of which* has been subdivided into *passing* and *persistent* Matter. Thus, for instance, the Matter of *straw*, *wood*, *paper*, under the action of *fire*, is called passing Matter; the Matter of the *clay*, when it changes under the same action into *brick*, is persistent. But this is really a division of little account; since it is based on that which is purely phenomenal. It is manifest that, in both cases alike, the Matter persists under the transformation.

Prolegomenon IV.

Matter is called *primordial* under a twofold aspect; first, as excluding any ulterior Subject to which it might be capable of being reduced, and, secondly, in relation to secondary Matter. That Matter, then, is *primordial*, which supposes no preceding Subject and is itself the ultimate Subject of all changes and forms. *Secondary* Matter is that which supposes a preceding Subject. All secondary Matter, therefore, supposes the primordial; and adds to it some form and disposition. In proportion to the nobility of the form

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to be evolved, there is required a more complex disposition of the Matter; as is exemplified in *vital organisms*.

§ 1.

The present Section is devoted to a twofold inquiry. First of all, it becomes us to inquire, whether there is such a thing as Primordial Matter, or an ultimate Subject in all bodily substances; secondly, if there is, what are its chief characteristics.

PROPOSITION CXXXIX.

In all bodily Substance there is a Primordial Subject of substantial changes.

The following are the proofs:—

I. Whatsoever entities are capable of formal changes, must contain within them some Primordial Subject of such changes. But all bodies are capable of formal changes. Therefore, they must contain within them some Primordial Subject of such changes. *The Major* is thus declared. In every change, as we have already seen, there is that which changes and something that remains, Subject of the change. Without the presence of this latter, it is impossible even to conceive of a change. Thus, in a *change of wind*, the *direction* changes, but the *air* remains the same. So, in a *change of health*, the *person* who has passed from strength to sickness is one and the same. A *block of marble* has been made into a *column*; then, into a *slab*; eventually, into *paper-weights*. But it is *the same stone* under these successive forms. A given *intellect* conceives first one idea, then another; but it is *the same intellect and the same soul*, persevering under both these forms. The thought has changed, not the thinker. Now, that persistent Subject either supposes another Subject, or it does not. If it does not, we have arrived at the Primordial Subject. The Proposition is established. If it does suppose an ulterior Subject, the inquiry returns upon that second; and so on, till we finally arrive at the Primordial, unless one would take refuge in the absurdity of an endless regress. This argument receives confirmation from the nature of bodies. For they are composite substances; and, forasmuch as they are substances, they exist in and by themselves, without the need of any other entity to which they may cling for support. In this sense it may be said of them, that

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they are *self-sufficient.* They, therefore, exclude any Subject or Material Cause *outside of* themselves. On the other hand, they are composite entities; that is to say, they are made up of certain constituent parts. But one part cannot be supported by another, and that other by a third; and so on, without limit. There must necessarily be some ultimate Subject of the rest. But that ultimate cannot be outside the composite substance, for reasons already alleged. Therefore, it must be among the intrinsic constituents of the substance itself. That constituent we call Primordial Matter. The above confirmation needs a word or two by way of explanation; otherwise, its cogency might not be appreciated. It must, then, be borne in mind, that the argument is derived from the intrinsic *constituents* of bodily substance; not from its *integrating parts.* There is no logical repugnance in supposing a body physically composed of a certain number of molecules, united by mutual cohesion; which by their sole union constitute that body, without need of a common Subject on which they depend. Similarly, in the dynamic theory, there is nothing to hinder us from conceiving a number of forces, gathered into one separate collection by virtue of a mutual attraction among themselves and repulsion beyond. But, we take from the former theory a molecule which, in spite of its minuteness, is a complete substance; and argue on the basis of its essential and accidental constituents,—its Matter, substantial form, extension, mass, figure, colour, hardness, etc. The same process applies to a force; but as its nature, as ordinarily represented, presents special difficulties to a metaphysician, and as we are here engaged only in the illustration of an argument, the dynamic theory shall be reserved for separate consideration elsewhere. The reasoning, then, in confirmation of the argument amounts to this. A bodily substance includes a substantial form, (by which it is what it specifically is, e.g. *carbon, iron, sodium,* and so on), together with various accidental forms. These inhere in Matter, as all are free to confess; otherwise, the thing would not universally go by the name of *material.* Now, of these constituents some manifestly depend on others. Thus, *colour,* as we have seen, depends on *extension.* Accidents, in general, depend upon the specific nature of the body, that is, (as the School would say), on its substantial form. Thus, *iron is hard; wax is soft: a living animal is warm; a corpse is cold: a diamond is solid; water, liquid; nitrogen, gaseous.* Transform *sugar* into *carbon* and its other constituents by the action of sul-

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phuric acid, all the *sweetness* and *stickiness* are gone. That substantial form is, in turn, sustained by some Subject. And this Subject? Our analysis must at last be arrested by an ultimate Subject, unless the regress be infinite; in which case the entity could never have begun to be.

II. A palmary proof of the existence in nature of a Primary Subject of substantial changes is derived from the never ceasing interchanges, the corruptions and generations, of bodily substances. One substance is transformed into another; and then, the latter is transformed back again into the former. *Hydrogen and oxygen*, in due combination, are by the agency of the electric spark transformed into *water*; and *water* by the same agency is transformed back again into *hydrogen and oxygen*. *Water*, again, is transformed into *steam*; and *steam*, by condensation, back again into *water*. *The Matter of a living animal*, (its flesh and blood, for instance), having been transformed into inorganic substances, in the process of retrograde metamorphosis, becomes *food of a plant*; and *the plant* becomes *food*, (that is, enters into the substance), *of an animal*. That animal may be the very one from which this travelling Matter originally came. *Carbonic Acid*, existing in the atmosphere, is decomposed by plants. The plants, giving up to the air the oxygen of the compound, retain the carbon for the formation of their several constituents. Some of these plants, in the form of vegetable food, supply to animal life their substance containing the carbon which, distributed through the system in various forms, is brought into contact with the oxygen supplied by the lungs, and is given forth in respiration in the form of *carbonic acid*. Here it is again at last; yet what a journey that carbon has made through the various orders of nature! Again: The constituents of *hydrochloric acid*, under the action of the galvanic battery, may be separated from one another, and obtained in the free state. If these two bodies, *hydrogen* and *chlorine*, so obtained in a free state, be intimately mixed together in proper proportions and submitted to the action of a powerful light or of heat, they will again form into *hydrochloric acid*. Another notorious fact is the proclivity of organized matter to return to dust, when the vital principle has departed from it; and that proclivity becomes more pronounced in proportion to the perfection and attendant complexity of its organic constitution. Take, once more, the instance of *fire*. It must be fed; otherwise, it will go out. There is *something* which the wood, turf, or coal,

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gives it, which is necessary to its continued existence. The fuel, indeed, passes to sensile perception, as a necessary condition of the continuance of the fire; but in passing, it gives and leaves *something* to the fire. Now, all these transformations, these alternate generations and corruptions, would be impossible, unless there were some common Subject in which all such transmutations could be respectively effected. That Subject will be the primordial one, and the Material Cause of these entities.

The Antecedent stands in need of declaration. Wherefore, i. All transmutation or transformation requires a Subject common to each term of the change; that is to say, common to the form displaced and to the one substituted in its stead. Unless this were so, there could be no real, entitative connection between the two terms and, as a consequence, no physical change. The first term would be simply annihilated, and the second term created. But both annihilation and creation are above the power of natural action. ii. If there were no such common Subject, the whole action of natural agency would be eliminated, either as impossible or as irrelevant to the generation of entities. To illustrate this *Antecedent*, let us begin with accidental transformations. An accident is newly introduced into a substance. For convenience' sake, we will take the instance of an *iron bar* which is thrust into a *furnace*. The *fire* there introduces the accidental form of *heat*. Now, first of all, it is in the nature of accident, that it should inhere in some Subject which sustains it in its generation and in its complete act. But *the heat* expels the contrary form of *cold*. This latter likewise required a Subject of inhesion. Therefore, both accidents must be in some Subject. But why in one common Subject? Because the displacing cannot exercise its activity on the displaced form under any other condition. In the given case, the form of heat is introduced by the fire of the furnace into the bar; and in that bar the communicated heat, inhering as in a Subject, expels from that iron bar the contrary quantity of cold. But, suppose that the accident of cold were in some other bar; the heat in the former bar could not affect it except by communicating heat, as efficient cause, to the second bar, which would cease to be cold by virtue of its own form of heat. In few words, the change requires a common Subject of both accidents. Proceed we now to substantial transformations. In these, again, there are two terms of the change,—two complete substances. The one perishes; i.e. it ceases to be in its specific nature.

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The other is newly produced. Furthermore, if we are to put any trust in the experience of the senses, the desition of the former is a necessary condition of the inception of the latter. Thus, *the destruction of the wood or coal*, (to adopt an ordinary mode of expression), is necessary to *the existence of the fire*. The disappearance of the *hydrogen* and *oxygen* is necessary to the appearance of *water*. Yet, whence this necessity, unless there be a real connection? And how can there be a real connection, unless there be an entitative synthesis? And how can there be an entitative synthesis, unless there be something common to the two terms? If *all* that is substantial in the former term perishes, and *all* that is substantial in the latter term begins to be; the corruption of the one could have no causal connection with the generation of the other. Whereas, on the supposition that the Subject remains the same throughout the process of transformation, it is easy to understand how the introduction of one substantial form by the efficient cause should operate the expulsion of the other. The perseverance of the substantial forms of hydrogen and oxygen is incompatible with the existence of the substantial form of water, and therefore this latter expels the two former; but this supposes a common arena in which the battle may be fought. Nor is it possible to imagine that this destruction of the former complete substance could be the result of natural activity on the part of some supervening accident, which might thus form an entitative link between the two substances, chasing away the one, and introducing the other. For, first of all, it is beyond the power of an accident to destroy its own Subject, or of itself to generate substance. Then, as every accident naturally postulates a Subject, and as the destruction of the one substance is simultaneous with the generation of the other; if the said accident had a hand in both, there must be something common to both, which is Subject of the accident. It is true that an accidental alteration of the Matter may necessitate a substantial transformation. But, in the first place, that accident acts by virtue of the efficient form which introduced it into the Matter; and, secondly, the constitution of the new substance is not due to the action of the accident, but to the actuation of a new substantial form, whose eduction is consequent upon the disposition of the Matter, and is caused, mediately and instrumentally by the accident or accidents introduced, principally by the substantial form of the efficient cause. But, here again, a common Subject is necessarily,

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presupposed throughout the whole process. For how is the efficient cause to introduce the new form,—to communicate an accident as its instrument;—if there is no common Subject? All its action relatively to the new substance would be superfluous, useless; unless, indeed, we are to suppose that its action is creative, in which case its previous action on the corrupted substance would have no connection with the new creation. But this is contrary to all experience. To assume an old illustration:—*The Matter of the water*, in virtue of the accidental form of *heat* communicated to it by the substantial form of *fire*, acquires at length a disposition which is incompatible with the substantial *form of water* and preparatory for the substantial *form of steam*. Consequently, the former makes way for the latter, which has been evolved out of the potentiality of the Matter by the action of the fire. But how could this be, if there were no common Subject of the water and the steam; unless the fire destroyed the water in its entirety and then, by an independent action, created the steam? But such a hypothesis is absonous. The same argument is confirmed in a striking manner by the instance of *food*. For that which an animal receives by way of nourishment is, partially at least, assimilated and absorbed into the bodily substance of that animal. Now, if there were nothing remaining of the food received and transformed by process of digestion, the whole action of the animal on that food would be superfluous. That which, by a pleasant fiction, it is supposed to have received, but has been wholly destroyed inside, can do the creature no good. It can neither nourish nor repair waste; for there is nothing left to do the one or the other. If there is something left, that *something* must be a Subject common to the substantial forms, to wit, those that recede—the forms, let us say, of *turnips* and *water*,—and the substantial form of the animal, which supervenes. The same argument evidently applies with equal force to the nourishment of plants. iii. Unless there were a common Subject, or Material Cause, of these substantial transformations; all bodily changes would be transubstantiations. For it is universally admitted that the substantial form is changed. According to the hypothesis, the Matter would be diverse. Therefore, the whole substance would be changed. Not even an accident could remain; for these depend on their Subject for their being and continuance. But there is no room here for the action of natural forces or, in particular, of active generation. Lastly, it would be unaccountable why the anni-

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hilation of one should be uniformly necessary to the creation of the other; save by having recourse to some Leibnitzian *pre-established harmony*.

III. The proof of the present Thesis will hardly be complete, unless we revert to an argument only referred to *per transennam* at the end of the first demonstration. So far, it has been clearly shown that there must be a common Subject of these changes and transformations; but it has not as yet been explicitly proved that there must be a *first* Subject, or Primordial Matter. This is, however, evinced by the aid of the principle, that there cannot be an endless series of Subjects in one and the same composite. You must, therefore, arrive finally at constituents, which are not themselves composed. One of these,—to wit, that which receives the primary form,—will be the first Subject. There is a striking illustration of this, borrowed from modern physical discoveries, which is reserved for the next Proposition.

NOTE.

This first Subject of bodily transformations is Primordial Matter, or *the Material Cause of all bodily substance;* and, for greater convenience, the latter term will be employed in subsequent Propositions.

PROPOSITION CXL.

The Material Cause of all bodies is numerically one only.

PROLEGOMENON.

Primordial Matter is said to be numerically one, not *positively*, but, as one may say), *privatively*. For numerical unity is positively predicated of that which has one determinate physical entity; as *this man, this rose, this blue.* Numerical unity is privatively predicated of that which has *no basis of numerical distinction.* 'It is in this latter sense that Primordial Matter is said to be numerically one;' 'because,' as St. Thomas writes, 'it is conceived as deprived of all the dispositions which cause numerical distinction, or out of which numerical distinction arises[1].'

The proofs of the Proposition are as follows:

I. The first argument is based on the fact of the common and mutual transmutation of all sublunary bodies. Daily experience

[1] 'Hoc modo dicitur materia prima unum numero; quia intelligitur sine omnibus dispositionibus quae faciunt differre numero, vel a quibus est differentia in numero.' *Opusc. xxvii (aliter xxxi), De Principiis naturae, ante med.*

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teaches that *common* and *mutual* transformations are occurring, one might almost say, indiscriminately throughout the vast realm of nature. By *mutual* transformations is to be understood a change of one or more substances into another which, in turn, is capable of being transformed back again into the former. By *common* transformations are signified such transformations as are common to many bodies. Thus, *carbon*, *oxygen*, *phosphorus*, *calcium*, etc. are one and all capable of being transformed into *animal substance*. Now, as far as the induction of nearly six thousand years can enable men to judge, there is scarcely one body,—if one,—in the vegetable or animal world, which is not capable of communicating some part of its substance by way of food to living things; which part, either profitably or noxiously as the case may be, is absorbed into the substance of the being that receives it, and begins to exist under the form of that being, at least for a short time. Hence, atoms (to speak the language of chemistry) may perform a circuit through the material creation, submitting to multiform combinations and resolutions; returning finally to the starting-point of their first departure, only to begin their travels anew. Nor does it matter to our argument, whether the atom contributes actually or only virtually to the substances through which it passes, and of which it forms a temporary part; that is to say, whether it is absorbed in its own actual entity or in chemical combination. In the latter, as in the former case, *something* of it is there; so much so, that it can be physically isolated, or, (as the metaphysician would say) reproduced, by chemical analysis. It follows, then, that the same atoms may successively belong to any and every variety of vegetable and animal life; nay, to lifeless substances as well. For *carbon* is found under the form of carbonic acid in *the air*, and pure in *the diamond*. Therefore, the *substantial* unity of those atoms seems to be ever changing; for they form part, now of the air, now of a vegetable, now of a brute animal, now of a man, then of the air again; and so on, in ceaseless succession. We may safely go further and say that such is the general law of nature. All things are in a perpetual flux and reflux. The primary elements join hands and let go again, as they move through the concentric circles of material substance. Yet, as regards *something* of their substantial entity, those atoms remain the same throughout their journeys. The substantial form changes; but the Matter remains the same, ready to receive the different forms

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which successively determine its being. Surely, these facts of nature justify a strong presumption, and more than a strong presumption, that the Material Cause of all corporal substances is one and the same.

A remarkable confirmation of the same argument is derived from comparatively recent discoveries in chemistry, and still more recent physical discoveries made by means of the spectroscope. All the known constituents of Matter, *physically* so called, have been reduced to some sixty-five or sixty-six elements, that is to say, simple substances in which chemical analysis has been as yet unable to discover any ulterior combination. In protoplasm, or *life-stuff* as Professor Huxley terms it, there exist four of these elements *always*, viz. carbon, hydrogen, nitrogen, oxygen; two others *most frequently*, viz. sulphur and phosphorus. Of these six principally, if not solely, protoplasm in the vegetable as well as animal kingdom is composed. Iron, another element, enters into the constitution of the blood of warm-blooded animals, and always in regular proportion, viz. 42 in every hundredth part of red-blood corpuscles. Calcium and magnesium, under the form of phosphates, enter into the constitution of the bones. Potassium is required for the muscular tissue; for the secretions, sodium and chlorine. Without going into further detail, it suffices to say, that the essential elements in plants are much the same. Thus the main constituents of the organized matter of living things are reduced to about eleven; to wit, carbon, hydrogen, nitrogen, oxygen, sulphur, phosphorus, calcium, magnesium, potassium, sodium, and chlorine. Water is composed, as we know, of two of these,—hydrogen and oxygen; while the air is mainly composed of nitrogen and oxygen mechanically mixed. Thus chemical analysis has discovered a comparative simplicity in the apparently complex constituents of physical matter, such as to establish a well-founded probability that the number of these simple bodies is still further reducible. But spectrosopic observations would seem to have changed this probability into certainty. First of all, they are supposed to have established the momentous fact, (though a serious doubt has been recently raised touching the justice of this conclusion) that the celestial bodies are composed of the same elements as sublunary bodies. But, secondly, more recent and carefully conducted observations have afforded weighty motive for concluding that most of the so-called elements of modern chemistry are really compound bodies, capable of ulterior

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reduction. In an interesting Paper, read on December 12th, 1878, before the Royal Society, by Mr. Lockyer, that eminent astronomer has concluded, from a long series of observations and experiments that 'the running down of temperature in a mass of matter which is eventually to form a star, is accompanied by a gradually increasing complexity of chemical forms.' Consequently, *vice versa*, an application of the dissociating force of heat tends, by separation of compounds, to a simplification of chemical forms. This had been already partially confirmed by past experiments. But Mr. Lockyer came to the conclusion, that the application of a higher temperature, such as that of the electric arc, would, in harmony with the law of continuity, produce further simplifications. The result has not belied his expectations. He has discovered in these bodies, hitherto considered elements, certain *basic* lines, common to the spectra of various so-called elements; which seems to point to the conclusion, that these supposed elements are really compounds, having a common base. It would not be seemly to forestal the conclusions of the illustrious physicist; but it would surprise few who have read his Paper, should it be eventually regarded as most probable, if not experimentally certain, that there are not above two or three simple bodies. Of course, this would give additional force to the argument in favour of the present Thesis, derived from chemical discoveries. But that which is at present certain is amply sufficient for our purpose. Remember that, whether the elements be one or fifty, they are complete substances. We have not yet reached the ultimate Material Cause, —the Subject of these substances. Now, by way of summary, let us see what these physical facts show. If there is hardly any limit to the capacity of bodies for mutual, common, successive transformations, (seeing that the same Matter is repeatedly passing from inanimate to living substance, and from one grade of living things to another throughout the range of nature, and back again in the same or in another cycle); and if the process of every transformation necessitates a common Subject of its two terms; is it not so far plain that the ultimate Subject of these changes must be one? Further: If all the complex bodies known in nature are compounded of two or more of these some sixty supposed primary elements whose numbers are diminishing under more careful observations, and those elements are constituted of an ultimate Subject with its distinguishing substantial form; surely it is reasonable to conclude that this undetermined Subject, (that is to say, considered

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apart from any form), is common to them all, and numerically one only with the unity of indetermination and indifference.

II. The Proposition is also proved by *à priori* demonstration. That which is itself uninformed and is indifferently receptive of any whatsoever substantial form within the range of bodily entities, as well as of the dispositions necessary for the eduction of one rather than another, is numerically one only. But the Material Cause of all bodies, as being the Primordial Subject, is itself uninformed, and is indifferently receptive of all such forms and dispositions. Therefore, the Material Cause of all bodies is numerically one only.

The Major is declared. For, if an entity is equally prepared to receive any and every form within the sphere of bodily substance, either immediately, or mediately through the previous reception of the dispositions requisite for the reception of this or that form; there is no reason for a multiplication. But, as nature is not wanting in things necessary; so, she is not wont to abound in things superfluous. Then, in the second place, since Primordial Matter is uninformed; there is no possible foundation of distinction and consequent multiplication. Its plurality is, therefore, a sheer impossibility. Numerical plurality is derived from individual distinction, at least in the instance of real entities; and all distinction is due to the form whence proceeds specific actuation. For species gives specific, actuation gives individual, unity. Wherefore, without form there is no foundation for plurality. This argument is confirmed. Any bodily form whatsoever is capable of being introduced into any whatsoever portion of Matter, provided that the latter has previously been fittingly disposed. Therefore, there is no need of distinction.

PROPOSITION CXLI.

The Primordial Material Cause of bodily entities is not a complete substance.

The Thesis is thus declared:

If the Primordial Material Cause of bodies were a complete substance, one of two hypotheses must be true. The distinction and multiplication of bodies must be the result either of supervenient accidental, or of supervenient substantial, forms. But neither hypothesis is admissible. Therefore, *the Antecedent* is false.

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To consider the two hypotheses separately:—i. It cannot for a moment be admitted, that the distinction and multiplication of bodies is due to accidental forms. For, first of all, it is contrary to all experience. When an entity is only accidentally changed, we perceive that it always preserves some remains of its properties, specific action, dispositions; and it returns more or less into its primitive condition, whenever the accidental form recedes. Thus, for instance, *a bar of iron is heated*, and becomes malleable; but its chemical affinities remain,—its shape remains unless disturbed by an extrinsic cause,—it has the same specific gravity. Again: No sooner does the form of heat recede, than it is as cold as before and exhibits the ordinary characteristics of iron. Again: *Phosphorus* has a natural affinity with *iodine*; but in the amorphous condition it no longer exhibits that affinity. If by the action of heat it be reconverted into ordinary phosphorus and thus the accidental impediment removed, it recovers that affinity in all its pristine energy. Take one more instance: *A man is suffering from cataract.* The crystalline lens,—an essential part of the mechanism of vision,—has become opaque. The patient has become blind of one eye. In all other respects he is the same as he was before. If the cataract is successfully extracted, his power of sight returns. But in generation and corruption of bodily substances the phenomena are widely different. The substantial identity is lost. Properties, activities, dispositions, are wholly changed; and, for the most part, there is no after possibility of immediate return from the new to the old nature. Take the *caterpillar*, the *chrysalis* in its cocoon, the *butterfly*, or *moth*, for an illustration. The first has feet and locomotion, is soft and often hairy, has a creeping movement, is not endowed with organs of reproduction, while its body-structure is rudimentary as compared with that of the butterfly, though admirably adapted to its own organic requirements, which are principally those connected with ingestion and assimilation of food. It feeds on the leaves and plants of trees. The second is quite different in external appearance and lives in a dormant state, with its whole body hermetically closed in by its chitonous integument,—buried, as it were, in its own self-produced coffin,—though preparing for its eventual resurrection. The third has the faculty of flight, with a structure very distinct from either of the two former, adapted to its peculiar life and method of motion. Its nervous system, sense-organs, and muscular apparatus are altogether different and of a

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higher type. The butterfly never, by any accidental or other change, relapses into the chrysalis or caterpillar; nor the chrysalis, in its turn, into the caterpillar. Take, for another illustration, *the body of an animal,—first in its living state, then in death, and lastly in a state of decomposition.* It was, in its original state, full of life and energy, digesting and assimilating its food, breathing, propelling its life-blood through its system, moving spontaneously hither and thither. In the state of death all these functional properties, that energy and life, are gone. Cold has succeeded to heat, stiffness to pliancy. Finally, decomposition for the most part sets in; and the corpse resolves into the elementary bodies of which it was originally composed. In vain would you attempt to bring back that mass of decomposition to the dead or living body of the animal. Thus, then, the phenomena of generation and corruption are experimentally distinct from, and in some respects opposed to, mere alterations, or accidental changes. There is a substantial identity permanent throughout the latter. *The phosphorus is phosphorus, whether it be ordinary or amorphous.* But, in the former, substantial identity is lost. No one would venture to say that *a butterfly is substantially the same as a caterpillar*, or that *two gases are substantially the same as one liquid.* Experience, therefore, teaches that the distinction and multiplication of material bodies are not due to mere accidental forms. No one of sane mind could conceive, that the difference between a *diamond* and a *rose-tree* or between a *dog* and a *sea-anemone*, or between a *viper* and an *oak*, was purely accidental,—that is to say, constituted by accidental form alone; or that *the individual distinction between the Chancellor and Vice-Chancellor of the University of Oxford* is as accidental as *the growth of each from infancy to manhood.*

ii. In the hypothesis, then, that the Primordial Material Cause, (which has been shown to be one), is a complete substance; is it possible that the distinction and multiplication of bodies could be due to supervenient *substantial* forms? This is the second of the two alternatives. There is but one answer to the question: It cannot be. The following is the reason why. This complete substance (which, as is supposed, is the Primordial Matter of all bodies) must be either composite or simple. But it cannot be composite. Therefore, if anything, it must be simple. *The Minor* is thus proved. A composite substance essentially connotes an ulterior Subject; consequently, it could not be the primary

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Subject. For a complete composite substance is composed of a receptive power and its substantial act; in which case, the former must be the ulterior Subject. It may be objected, that the above argument may hold good in the case of incorruptible and ingenerable bodies, if such there be; but that, in all those bodies which are objects of experience, the Primordial Material Cause must be a composite substance. For it is an acknowledged fact, that the Material Cause must be variously disposed for the reception of disparate substantial forms, and that the disposition must be more elaborate in proportion to the nobility of the form introduced by the action of the efficient cause. Therefore, there must always be some previous form in Matter, in order to prepare the way for the reception of each particular substantial form. In a word,—to put it roughly,—you must begin with *body*. But such a supposition is inadmissible; and the sole argument on which it rests, valueless. For, first of all, this putative universal primary form has never given any visible signs of its existence. The properties, common to bodily substances, are all traceable to the several forms by which these substances are specifically constituted, and are sufficiently accounted for by their activity. For clearness' sake, let us consider this subject in the concrete, and take for granted that, as modern chemistry teaches, there are some sixty elements, or simple bodies. These bodies, as being elements, are primordial complete substances, incapable of ulterior physical resolution into yet simpler complete substance. If, therefore, any further resolution is possible, each component will be an incomplete substance. Let us call them, in unison with the teaching of the School, the determinating form of each element on the one hand, and undetermined Primordial Matter on the other. In the case of these elements, the actuation of the Matter by the primitive forms of *hydrogen*, *oxygen*, *carbon*, *calcium*, and the rest, would not postulate any previous disposition of the Matter. But its first determination by any one of these forms would simultaneously give to it its proper quantity and certain qualities proper to each form. Subsequently, the combination of two or more elements in varying proportions would dispose the Matter in those combined elements for the introduction or eduction of higher forms with new properties accompanying them, or at least with modifications of the properties belonging to the component simples; and so onward, to yet more complex combinations and nobler forms. All, therefore, that the said supposititious form is

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evoked to effect, is already amply provided for without its interference. It is consequently superfluous; for there is nothing for it to do.

If, then, the Primordial Material Cause cannot be a *composite*, it remains to be seen whether it can be a *simple*, complete substance; for this is the second alternative of our dilemma. But this is likewise inadmissible. For in such case there would be two specific substantial forms together actuating the same portion of Matter; which is impossible. For these two specific forms must either actuate the same Matter immediately and independently of each other, or the one must be the act of the other as already actuating the Matter. The first supposition may be forthwith dismissed; for in such case the one form would not necessarily be subject of the other; nor would the complete substance,—that is to say, the Matter as actuated by the precedent form,—be the Material Cause of the subsequent form. But this is destructive of the hypothesis. Neither can the second supposition stand. For it is a contradiction in terms, that one and the same substance should be essentially constituted in two specifically distinct natures. But each substantial form of itself essentially constitutes substance in its specific nature. Therefore, if there were two substantial forms in one and the same substance, that substance would be essentially constituted in two specifically distinct natures. It will be seen at once, that this last argument is equally fatal to both suppositions.

Corollary.

It follows from the truth demonstrated in this Proposition, that no physical element or elements can be the primordial Subject of material substances. They may be the ultimate or ultimates of chemical analysis; but they cannot satisfy for the ultimate which is the object of metaphysical research. It may be well to notice how independent the latter is of the former, while the former, however eventually determined by physical experiment and research, must necessarily submit to the determination of the latter.

§ 2.

Real Entity of Primordial Matter.

Having demonstrated in preceding Propositions, contained under the previous Section, the existence of a Primordial Material Cause, —that it is numerically one only,—and that it cannot be a complete

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substance; it is now necessary to determine the amount of reality that is attributable to it. Such is the purport of the Propositions included under the present Section. It will assist the reader, if the discussion is introduced by a few prefatory observations sufficient to indicate the course of this inquiry. It is undoubted that Primordial Matter cannot naturally exist, apart from the actuation of some substantial form. It *co-exists*; but it cannot *exist*. Consequently, it is easier to determine the amount of reality that attaches to it, when it is considered as forming an actual part, or constituent, of the substantial composite,—that is to say, as actually informed,—than as reduced by metaphysical analysis to a state of isolation. It is for this reason that our present investigation commences with Primordial Matter considered as existing, in the only way in which naturally it can exist, in complete corporal substance. By the aid of conclusions thence obtained, it will be easier afterwards to consider it as it is in itself.

PROPOSITION CXLII.

It is certain that the Primordial Material Cause of bodily substance, actually informed,—that is to say, as existing under the actuation of its form in a complete substance,—has a certain real and substantial entity really distinct from the entity of its substantial form.

To any one who examines the enunciation of this Proposition it will be apparent, that there are three Members included under it; viz. that Primordial Matter in the complete bodily substance has a real entity; secondly, that this real entity is substantial; lastly, that this substantial entity of Matter is really, and not conceptually only, distinct from the entity of its form. To take each of these Members separately:—

I. Primary Matter in complete bodily substance has a real entity.

If the Primordial Material Cause had no reality, it would be nothing. But *nothing* cannot be a real Subject of transformations, generations, or generally of any sort of real change. Therefore, there could be no generations and corruptions; because there would be no common Subject. As a consequence, all so-called substantial

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mutations of bodily substance would be reduced to a series of alternate creations and annihilations. Moreover, the substantial form of all material substances, with one exception, is educed from the potentiality of Matter. But, if the said potentiality were a potentiality of nothing, it would be no potentiality. Whence, in such case, the forms? They could not be evolved, or communicated, by secondary efficient causation; wherefore, one and all would be created, and all ancestral or other active generation would be not only superfluous but impossible. Finally,—and this is a palmary argument,—the common sense of mankind in every age has instinctively recognized the real entity of Matter in material substances.

II The real entity of the Primordial Material Cause is substantial,—*that is to say, not accidental.*

Primordial Matter enters essentially into the constitution of the complete substantial composite. But that which is the essential constituent of a substance, must itself be a substance, however partial, incomplete, and rudimentary; otherwise, the *essence* of a substance might be in part composed of that which is not substance,—a contradiction in terms. Again: In complete composite substance, there is something real added to the entity of the form. But that *something* cannot be an accident; for it is an integral part of substance, *qua* substance. Besides, accident presupposes substance already fully constituted as its necessary Subject. Lastly; Accident essentially postulates, as its correlative, a possible Subject of inhesion. But it is metaphysically impossible that Primordial Matter should have any Subject of inhesion; because itself is the first Subject, and consequently can be subjected to no other.

III. The substantial entity of Primordial Matter is really distinct from the entity of its form.

As we have seen, Primordial Matter is indifferently receptive of any whatsoever bodily form; neither has it, in itself, even an initial disposition for the reception of one form more than of another. Consequently, it is an entity really and physically separable from any of the particular, determinate forms by which it is *hic et nunc* actuated; though it cannot exist in a state of separation from all form in general. But this would be impossible, unless there were a real distinction between the Matter and its

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form. Nor can this distinction be a *minor* distinction, such as intercedes between an entity and its mode. For it is impossible that the substantial form should be a mere mode of Matter, since it has an entity of a far higher order than that of the Matter. Besides, the two are sometimes physically separable from each other; as in the instance of a man's death, when soul and body both exist in a state of mutual separation. Consequently, form and Matter are really distinguishable from each other, as *thing* from *thing*. Lastly, in bodily substance there is a real, physical composition of Matter and form; therefore, the entities of the two are really distinct.

PROPOSITION CXLIII.

The Primordial Material Cause of bodily substance has its own actual essence; yet not without intrinsic and necessary relation to the form.

The meaning of the Enunciation is this: Primordial Matter has a real entity of its own, which is its essence, apart from the intrinsic actuation of the form; nevertheless, that real entity of Matter essentially includes a transcendental relation to the actuating form. Hence, the Proposition contains two Members.

I. THE FIRST MEMBER, in which it is affirmed that *the primordial Material Cause of bodily substance has its own actual essence*, is thus proved. Matter has a real entity of its own, apart from the intrinsic actuation of the form; as has been demonstrated in the preceding Thesis. But an entity is that which has an essence. Therefore, the essence of the Matter is really distinct from the essence of its form; and the *actual* essence of the Matter, that is to say, as existing in the composite, is really distinct from the *actual* essence of the form. Furthermore: since Primordial Matter is a thing that has a real essence of its own, it cannot be intrinsically constituted in its own dimidiate entity by its actuating form. For a form can intrinsically constitute a nature in its essential entity, only as act of a real subjective potentiality, in union with which it forms the composite. Therefore, the causality of the form has for its term the composite, not the potentiality. Consequently, the essential entity of Matter cannot be communicated to it by the form; for Primordial Matter is essentially a

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simple entity, like its form, and the primary composition results from the conjunction of the two. The above argument may be thus confirmed. Every simple entity is of itself constituted in its own essential nature, and not by the intervention of any other entity; for by this it is essentially distinguished from composite being. But Primordial Matter is a simple entity; because it is a pure receptivity. Therefore, etc. Again: Whenever a substantial form intrinsically constitutes an essential nature, the entity so constituted is *ipso facto* a complete substance. But Primordial Matter is an incomplete substance; as has been demonstratively shown in the *hundred and forty-first* Proposition. Therefore, the substantial form cannot intrinsically constitute the essential nature of Primordial Matter. Finally: An additional argument is derived from the nature of a pure potentiality. For it is of the nature of a potentiality, that its act is an extrinsic term; that is to say, extrinsic to its own essential entity and added to it. Thus, —to take an illustration from an active potentiality,—the faculty of the intellect is actuated by a thought. That thought is extrinsic to the essential entity of the faculty, and supervenes after the fashion of a real addition. This is plain enough; for the intellectual faculty remains *essentially* the same, before the thought, in union with the thought, after the departure of the thought. But the thought terminates the faculty, and is a real addition to it; since there is a reality in the faculty which was not there before, and a reality which, while reducing the faculty to act, forms no part of its essence. It is true that, in the above instance, the form is an accidental form, and the potentiality active, not passive. This, however, in no way affects the argument nor, as a consequence, the force of the illustration. To resume:—If the form should intrinsically constitute the entity of Primordial Matter, Matter would intrinsically include the form in its own essential definition as its constitutive, and not as an extrinsic term or addition. It would follow from this, that Primordial Matter could not be a pure potentiality, or receptivity. It may be further urged in confirmation of this argument, that, if the essential entity of the Primary Material Cause were intrinsically constituted by the form, it would change with every change of form; and, consequently, could not be numerically one only, which it has been proved to be in the *hundred and fortieth* Thesis. Secondly, it would in such case be difficult to understand, how the entity of Primordial Matter could

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be really distinct from that of the form and could, accordingly, make real composition with it.

II. The second Member of the Proposition, wherein it is declared that *the Material Cause of bodily substance includes in its essence an intrinsic and necessary relation to its form*, is thus proved. Every potentiality includes in its essential nature an intrinsic transcendental relation to its own proper act, or form. But Primordial Matter is a pure potentiality. Therefore, it essentially includes in its entity an intrinsic transcendental relation to its own proper act. But the substantial form is the proper act of Primordial Matter. Therefore, Primordial Matter,—or the Primary Material Cause,—essentially includes in its entity an intrinsic transcendental relation to the substantial form.

Note. This transcendental relation of Primordial Matter does not primarily regard any one form in particular more than another; seeing that it is indifferently receptive of any whatsoever form. But it is terminated to substantial form in general. Hence, though there be changes of form in Matter; nevertheless, the essential relation of Matter to form never changes. For Matter is formally related to its act; and it can be actuated by any form indifferently.

PROPOSITION CXLIV.

In the substantial composite the Primary Material Cause of bodily substance has, in and of itself, an actuality of existence really distinct from the existence of the substantial form; nevertheless, it is essentially dependent on the form for its existence.

I. The first Member of this Thesis, which affirms that *in the substantial composite Primordial Matter has, in and of itself, an actuality of existence distinct from the existence of the substantial form*, follows as a corollary from the preceding Proposition, if interpreted by the light of the doctrine touching actual essence and existence established in the second Book. For it was there seen that the distinction between actual essence and its existence is not real but conceptual; though founded on a reality. If, then, the actual essence of Primordial Matter is really distinct from the actual essence of its form, it must of necessity be that its existence should in like manner be distinct from the existence of the form. Then again: Primordial Matter, as presupposed in order of nature to the

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form, and as Subject out of which and in which the generation of complete bodily substance is effected, is something actual. But if something actual, it is something existent and with an existence after a manner prior in order of nature to the existence of the form; therefore, really distinct from this latter. Finally: The actual entity of complete bodily substance is composed of two partial entities. Therefore, its integral existence is composed of two partial existences; and as the entities are really distinct the one from the other, so must the existences be in like manner.

II. Similarly, THE SECOND MEMBER, in which it is asserted that *the existence of Primordial Matter is essentially dependent on the form*, follows as a corollary from the previous Proposition. For it was there shown that the essential entity of Primordial Matter, or the Material Cause of bodily substance, includes a necessary, intrinsic, transcendental relation to the substantial form; therefore, *à pari*, the existence of the former must have a like relation to the existence of the latter. But the only transcendental intrinsic relation which a pure passive potentiality can have to its determining act, is one of dependence. For a purely passive potentiality, or receptivity, has an entity and existence so imperfect that it cannot *be* without the assistance of the form. What the definite nature of this dependence is, will be explained later on.

PROPOSITION CXLV.

Although the Primary Material Cause of bodily substance is not in such sense a pure potentiality as to exclude metaphysical, and some sort of entitative, act in the composite; nevertheless, in respect of the informing act as likewise in comparison with act simply and absolutely so called, it is truly and properly denominated a pure potentiality.

PROLEGOMENON I.

Potentiality,—to repeat a division which has been already given in the Chapter *on possibles*, (Book II.),—is twofold; viz. *objective* and *subjective*. That is said to be an *objective* potentiality, which in no sense actually exists itself; though it could exist, if a sufficing efficient cause should will to produce it. Its existence is possible; because there is no extrinsic or intrinsic repugnance. A *subjective* potentiality is something of and in itself, as being a capacity for its act. Subjective potentiality is twofold. There is a *passive*

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potentiality, or pure receptivity of its act. There is also an *active* potentiality, or capacity for effecting its act, by which,—if immanent,—it is itself informed. This latter has received under different points of view the respective names of *faculty*, *power*, *force*; and may be at once dismissed, as having little or nothing to do with the present discussion. It should be noticed, however, that an active potentiality is a complete entity within its own Category; which a passive potentiality is not. From the difference between objective and subjective potentiality relatively to actual existence, there arises some little variation of phrase. A thing is said to be *in objective potentiality*, because *in itself* it is nothing. But a thing is not said to be *in subjective potentiality*, (in other words, it is not put *in obliquo*), unless it is absolutely—in some way or other however imperfect—an act, and receptive only in some particular way; as, for instance, substance is in subjective potentiality to this or that accident. If it is not act properly so called, it is said to be a subjective potentiality (*in recto*).

Prolegomenon II.

As many as are the senses of the word *potentiality*, so many are the senses of the word *act*; for the two are correlatives. Act may be understood as the correlative of *objective* potentiality; and then it means *something actual and existing*. Or it may be taken for the correlative of *subjective* potentiality; and then it means the informing act completive of the composite, or the act terminative of a faculty, according as the potentiality is passive or active. Of these two, the one that corresponds with objective potentiality is *absolutely* act, as being in itself actual; the other that corresponds with subjective potentiality is *relatively* or *respectively* act, forasmuch as it is act of something else. Both admit of subdivision. For act, *absolutely* such, is either *simply* act or act *somehow*. That is simply such, which, by virtue of its own actuality, includes all that formal perfection which composite entities receive through their substantial form; as, for instance, an Angel. It is said to be act *somehow* (*secundum quid*), when it is something, yet so imperfect as to require some act in order to complete its entity and enable it to exist; that is to say, though an imperfect something in itself, it only becomes actual in union with another. It might roughly perhaps be called a *half act*. Act, *respectively* such, is either *physical* or *metaphysical*. Of these

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physical act is a physical form really actuating Matter, (if a substantial form), or substance, (if an accidental form); and constituting a composite, by the union of itself with its Subject, in the physical order of things. Metaphysical act is real, but not physical; that is to say, the entities are real, yet there is no real or physical distinction between the actuating and the actuated, but only a conceptual distinction founded in reality, (*rationis ratiocinatæ*); as, for instance, *existence is the act of essence, subsistence is the act of substance*, and the like. With a discrimination parallel to that which has been signalized in the use of the word *potentiality*, a thing is said to be *in act*, (*in obliquo*), as contradistinguished from that which is *in objective potentiality;* while a thing is said to be *act*, (*in recto*), as contradistinguished from a *subjective potentiality*. That which is *absolutely* act has been called *entitative* by some Doctors of the School; that which is *relatively* act, *formal*. The meaning in both expressions is obvious.

Prolegomenon III.

There is a change of phrase in the second Member of the present Proposition, which it may not be amiss to explain. Primordial Matter, or the Primary Material Cause of bodily substance, is said to be a pure potentiality *in respect of* the informing act; as also *in comparison with* act absolutely and simply so called. The reason for this difference of expression is to be found in the distinct respect of Primordial Matter to the two species of acts. For it has a transcendental intrinsic relation to informing acts; whereas it has no intrinsic relation to acts absolutely and simply such, i.e. to separate or pure forms, yet can be compared with them.

I. The first Member of the Proposition, wherein it is declared that *the Primary Material Cause of bodily substance is not in such sense a pure potentiality as to exclude all metaphysical act in the composite*, is thus demonstrated. That which has a certain transcendental perfection and goodness of its own, does not exclude all, rather it necessarily includes some, metaphysical act. But Primordial Matter has a certain transcendental perfection and goodness of its own. Therefore, etc. *The Major* is thus proved. That which has a certain perfection and goodness proper to itself, must have some, at least transcendental, actuality. But transcendental actuality connotes a metaphysical act. *The Minor* is proved after this manner, according to its separate parts. (*a*) Primordial Matter

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has a certain transcendental perfection proper to itself. For the integral composite is more perfect than either of its parts; therefore, than its form. But, if so, Primordial Matter must give to the composite a perfection distinct from that of the actuating form. Consequently, it has it to give. (*b*) Primordial Matter has a transcendental goodness proper to itself. For everything that is appetible, or desirable, is good. But Primordial Matter is appetible alike by the substantial form and the complete composite; because, by reason of its own transcendental perfection, (and not merely as means to an end), it is agreeable to both. The above argument is thus confirmed. That which is the first Subject, must have a partial act of subsistence, proportioned to itself in the composite, which is at least transcendental;—in a word, a metaphysical act. For that which is the primary subject of all bodily substances, must have some sort of subsistence proper to itself; since an entity must subsist in itself before it can,—in order of nature,—become Subject of that which is other than itself.

II. The second Member, which affirms that *the Primary Material Cause of bodily substance is not in such sense a pure potentiality as to exclude entitative act of whatever kind in the composite*, is thus proved. A pure subjective potentiality, or receptivity, does not exclude,—nay, it necessarily includes,—some sort of entitative act. But Primordial Matter is a pure subjective potentiality. Therefore, etc. The following is a declaration of *the Antecedent.* A pure subjective potentiality does not exclude all reality, or denote the simple nothingness of itself. On the contrary, subjective is essentially distinguished from objective potentiality, (as has been already suggested in the first Prolegomenon); in that the former is something entitatively real, the latter nothing entitatively real, in itself. But if subjective potentiality is something real in itself, it must be a real entity in some sort of a way; and, if it be an *actual* potentiality, (as it is when in union with its actuating form), it must be somehow existent, as it were, in its own right. If, then, it be in any way a real entity and really existent *of its own nature*, although necessarily in connection with its form; it must include in itself some sort of an entitative act,—that act by which it is rescued from a state of mere objective potentiality, or of mere possibility. Again: That which really and properly receives, or is capable of receiving, actuating forms, must be in some way or other entitatively real. For how can that which has no real entity,—

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no actuality of being,—be truly capable of receiving anything? In order to be able to receive, it is first necessary to be. Hence, Primordial Matter must have some sort of real entity, prior in order of nature to its actuation and, *à fortiori*, to the complete composite.

III. The third Member, in which it is declared that *Primordial Matter is properly denominated a pure subjective potentiality in respect of its informing act*, is proved in this wise. That which is not an informing act and in its own intrinsic nature and formal concept does not include, but positively excludes, any physically informing act, but at the same time includes essentially in its nature a transcendental relation of mere receptivity, (or of passive capacity), to act or form, is truly said to be a pure potentiality in respect of its informing act, or substantial form. But such is the entity of Primordial Matter. For, as we have seen, it is simple; and, as such, excludes the possibility of intrinsic composition with any informing act, so far as its own dimidiate entity is concerned. Again: Its essence is exclusively that of a passive potentiality, or receptivity. Further: It cannot exist, so imperfect is its nature, save by the aid of its substantial act; which manifestly shows that it can include in its own entity no physical or formal act.

IV. The fourth Member, which asserts that *the Primary Material Cause of bodily substance is properly denominated a pure subjective potentiality in comparison with act absolutely and simply so called*, is demonstrated as follows. Let us recall to mind what is meant by an act of this description. It is a complete substance and form which is absolutely constituted in itself by virtue of its own actuality; such as is found in the instance of purely spiritual natures. It is intrinsically in want of nothing outside itself for its own substantial constitution and existence. But, if Primordial Matter, by reason of its extreme indigence, excludes all, even actuating, form from its essential definition and consequently all formal act,—if, besides, it essentially connotes such a dependence on its substantial form that without that form it cannot naturally exist;—*à fortiori*, must it be considered as exclusive of simple form or act, and as a pure potentiality in comparison with, not however in relation to, such acts. Again: That which of all realities is the most indeterminate and is wholly and indifferently determinable, is truly conceived as a pure subjective potentiality in comparison with that which is the most perfectly determinate of all finite things. But Primordial

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Matter is the most indeterminate, and wholly as well as indifferently determinable, of all realities; while a simple act is the most perfectly determinate. Therefore, etc. *The Major* is evident. For that which is indeterminate but determinable, is potential of determination, that is to say, is capable of receiving determination; and that which is most indeterminate and wholly determinable is purely potential of determination, that is to say, is a pure subjective potentiality.

Corollary I.

It follows, that Primordial Matter, considered exclusively as it is in itself, is truly said to be a pure, and as it were remote, potentiality in respect of accidental forms; for these follow upon its union with the substantial form and the constitution of the composite.

Corollary II.

From the declaration of doctrine made in this Proposition it follows, that it would be ambiguous, if not inaccurate, to speak of Primordial Matter as being *in pure potentiality*, without some addition. For this would sound as though Matter were only in objective potentiality, that is to say, nothing in itself, and only existing logically and,—may the expression be pardoned?—*potestatively*, in another; which is untrue. But it is justly called a pure subjective potentiality; because a subjective potentiality is *something*, albeit the most imperfect and least entitative of all things. The word *pure* regards physical, not metaphysical act.

Corollary III.

It follows that Primordial Matter is naturally ungenerative, indivisible, incorruptible, indestructible. It is *ungenerated*; because it is first Subject, and generation is primarily distinguished from creation, for that it connotes and postulates a Subject in which it may be affected. This is to be understood of passive generation; but active generation likewise essentially requires a Subject into which it may introduce the form. It is *ungenerative*; because it is a purely passive potentiality, and to generate is to act. It is *indivisible*; because it is an unquantified receptivity. It is *incorruptible*; because it is simple, and corruption consists in a resolution of parts. It is naturally *indestructible*; because annihilation,—the only manner of destruction possible to it,—is beyond the power of any natural force.

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Hence, lastly, it is not naturally subject to either addition or subtraction.

COROLLARY IV.

Primordial Matter cannot exist without information by some form. Hence, in all substantial changes, the recession of an existing form is dependent on the accession, or introduction, of another. The former is expelled by the action of the latter. Whether this later be dispositive and transitory or completive and final, in no wise affects the truth of the doctrine. Primordial Matter can never remain alone. It requires some act.

§ 3.

THE DOCTRINE OF ST. THOMAS TOUCHING PRIMORDIAL MATTER.

As the present Chapter embraces a question of exceptionally grave interest and importance, in face of the many and divergent theories touching the fundamental constitution of material substances, which have in turn been advocated from the earliest times up to this present, and as no part of Scholastic Metaphysics has been so ruthlessly assailed by gnostic and agnostic, if indeed in the rank of its assailants gnostic there be; the author has judged that it would be conducive to the main purpose of this Work as revealed in the title, if he presented the teaching of the Angelic Doctor to the reader under a separate Section. For much the same reason he has thrown together, in the succeeding Section, all the difficulties and arguments indirectly or directly marshalled against the truth of the doctrine in general, and against each Proposition in particular.

That St. Thomas acknowledged the existence of Primordial Matter, or of a first Subject of bodily transformations, is beyond all doubt. Nor was it possible to anticipate otherwise from one who was so ardent an admirer, and so faithful a disciple, of the philosophy of Aristotle. As a fact, questions about ὕλη crop up over and over again throughout his Works. Its metaphysical position, (as one may call it), he determines, in accordance with the enunciation of the *hundred and thirty-ninth* Proposition. 'Matter,' he tells us, 'is the first Subject which is not in any other[1].' And, again, in another place; 'It is of the essential nature of Matter,' (he is evidently referring in both passages to Primordial Matter), 'that it cannot be

[1] 'Quia materia est subjectum primum quod non est in alio.' 4 *d.* xii, *Q.* 1, *a.* 1, *q.* 3, 1^m.

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in any other; but that itself should be the first Subject[1].' That he considers the first Subject of bodily entities,—in other words, Primordial Matter,—to be numerically one only, in accordance with the teaching of the *hundred and fortieth* Proposition, is equally indisputable. For it is not only to be gathered indirectly from his declarations, (presently to appear), as to its indistinction and indivisibility; but he categorically affirms it in the following words: 'You must know that Primordial Matter is said to be numerically one in all things[2];' i. e. in all bodily substances subject to generation and corruption. It is necessary to introduce this conditioning clause, because of certain other passages in which St. Thomas makes an exception to this statement in favour of the celestial bodies which, in accordance with the physical theories of his day, he supposed to be incapable of generation or corruption, and consequently to have a Primordial Matter different from that of sublunary bodies. As the said theory is supposed to have been exploded by subsequent observation, (though that has been rendered somewhat doubtful, as it would seem, by the observations of Mr. Lockyer); it suffices to call attention to the fact and there to leave it. That Primordial Matter, in the judgment of St. Thomas, is not a complete substance, can be established by the most abundant evidence. Thus, for instance, he informs Brother Sylvester, 'That is called Matter, which has being from something that accrues to it; because of itself it has incomplete being, or rather none at all[3];' that is to say, it cannot exist, but only co-exist. That he does not intend to reduce Primordial Matter to utter nothingness, will appear from the next quotation and from others that are to follow. It must be remembered, in connection with this subject, that the word *being*, (as was fully explained in the second Book), represents two distinct concepts; viz. that of essence, and that of existence. This latter Primordial Matter by itself cannot have; because that which exists is in act; and a pure potentiality excludes any physical act of whatsoever sort. But it may,—nay, must,—have a partial entity, however intrinsically dependent upon form. Hence, St. Thomas observes, that 'Although Matter cannot exist by itself; nevertheless, it can

[1] 'De ratione materiae est quod non sit in alio, sed quod ipsa sit primum subjectum.' *Spiritu. a.* 2, *c., in fi.*

[2] 'Sciendum est etiam, quod materia prima dicitur una numero in omnibus.' *Opusc. XXXI, (aliter XXVII), De principiis naturae, ante med.*

[3] 'Materia dicitur, quod habet esse ex eo quod sibi advenit, quia de se esse incompletum, immo nullum esse habet.' *Ibidem, in init.*

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be considered by itself[1].' But, if it can be metaphysically considered by itself, it must have some reality, or object of consideration. Again: The same Doctor in many passages, (some of which shall be now given), ascribes to Primordial Matter the extremest imperfection of being. These passages establish two points. First of all, according to the teaching of St. Thomas, Primordial Matter has an entity of some sort,—is something real. Secondly, it is nevertheless not a complete substance. 'Primordial Matter,' he says, 'is the most incomplete of all entities[2].' Again: 'Every thing is active, in proportion as it is Being in act. Wherefore, by how much certain entities have greater deficiency of Being, by so much are they less active. This is plain in the instance of Primordial Matter; in which there is no active potentiality, because it holds the lowest grade among entities[3].' Once more: 'Since Matter,' he remarks, 'as such, is in potentiality, the primordial material principiant must be foremost in potentiality and so, most imperfect[4].' Lastly, in another place, he distinctly asserts the impossibility of Matter being terminated to existence without its form. These are his words: 'Being *itself* is the proper act, not of the Matter, but of the whole substance. For *to be* is the act of that of which we can predicate that it is. Now, Being is not predicated of Matter, but of the whole[5].' Two interesting and instructive passages will serve to crown this part of the teaching of St. Thomas, which corresponds with the first three Propositions in the present Article. The Angelic Doctor proposes to himself the question, whether Matter without form was prior *in order of time* to Matter informed. That it is in some sort prior *in order of nature*, follows as a necessary consequence from the fact that it is, as St. Thomas asserts, the first Subject of all forms. In solving this problem, he argues as follows: 'It is impossible to admit that the informity of Matter preceded

[1] 'Quamvis materia secundum se esse non possit, tamen potest secundum se considerari.' *Verit. Q.* iii, *a.* 5, 3^m.

[2] 'Nullo modo . . . substantiae spirituales ad esse suum requirant materiam primam, quae est incompletissimum inter omnia entia.' *Spiritu. a.* 1, *c.*, *v. m.*

[3] 'Unumquodque est activum, secundum quod est ens actu: unde quanto aliqua habent deficientius esse, tanto minus sunt activa: sicut patet de materia prima in qua non est activa potentia, quia tenet ultimum gradum in entibus.' 3 *d.* xiv, *a.* 4, *c.*

[4] 'Cum enim materia, in quantum hujusmodi, sit in potentia, oportet quod primum principium materiale sit maxime in potentia, et ita maxime perfectum.' 1^a^ iv, 1, *c.*

[5] 'Ipsum esse non est proprius actus materiae, sed substantiae totius; ejus enim actus est esse, de quo possumus dicere quod sit. Esse autem non dicitur de materia, sed de toto.' *Cg. L. II*, *c*. 54.

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in time its information and distinction. As to the point of information, indeed, the thing is evident. For, if unformed Matter had preceded in duration, it would have been then already in act; because its creation involves this.' St. Thomas, as will presently be seen, maintains that Matter cannot possibly be generated. That it is not sole reason of its own existence, is yet plainer. But he professes to accept its creation *in time*,—that is, its concreation,—on faith in a Divine Revelation. To continue with the quotation:—'For the term' (or, result) 'of creation is Being in act; but that which is act, is form. Therefore, to say that Matter preceded without form, is to say that Being in act is without an act; which involves a contradiction. Nor can it be said, that it had some common form; and that, afterwards, different additional forms supervened by which it received distinction. For this would be identical with the opinion of the ancient physicists, who laid it down that Primordial Matter is some body or other in act,—as, for instance, fire, air, water, or something betwixt and between. Whence it followed, that *to be made* was really nothing else than *to be altered*. Because, since that preceding form gave actual being in the Category of Substance, and caused their being this something,' (i. e. this specific entity), 'it followed that the supervening form did not make Being in act *simply*, but made Being in act *such*, which is the province of an accidental Form.' This last sentence requires, perhaps, a little elucidation. St. Thomas, then, argues that, if there were a preceding form common to all Matter, that form would actuate Matter, and so constitute one common complete composite substance with its specific nature. For this is proper to every substantial form. But, if so, every form that came afterwards to the same already informed Matter could only inform a completely constituted substance,—a being that is *this something*. It could, therefore, only modify it by making this same being, already definitely complete, *such*,—that is to say, with such and such accidental distinctions. But this would be to alter, not to make. Now, to proceed with the quotation: 'And so, the later forms would be accidents, whose result is not generation but alteration. Hence, it must be affirmed, that Primordial Matter was created neither wholly without form nor under one common form; but under distinct forms.' Therefore, it is not a complete substance. 'Wherefore, . . . the informity of Matter, as Augustine says, did not precede its information or distinction

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in time, but in origin or nature only; in the way that potentiality is prior to act, and a part to the whole[1].' From the above passage we gather, i. That, in the judgment of the Angelic Doctor, there is such a thing as Primordial Matter; ii. That it is the first Subject of all substantial forms; iii. That it is not a complete substance; iv. That it must have been concreated under the actuation of more than one distinct form. The second of the two promised passages is taken from the same Article; and consists of an answer to a difficulty, suggested by the Mosaic Cosmogony as given in the first Chapter of the Book of Genesis. The difficulty may be thus stated. It is there said that '*the earth was void and empty*' (Gen. i. 2); by which, as St. Augustine understands it, is designated Primordial Matter. Therefore, according to this interpretation of the words of Moses, unformed Matter preceded in order of time Matter actuated by its forms. To this objection St. Thomas gives an answer, from which the following extract is made: 'Augustine maintains that under the name of *earth* and *water*,' (referring to the words of Moses already quoted, and to those others, 'darkness was on the face of *the deep*,' and again, 'the spirit of God moved over *the waters*,' *ibidem*),' is understood in this place simply Primordial Matter. For Moses could not convey the idea of Primordial Matter to a rude people, except under the likeness of things which they knew. Hence he represents it under the likeness of many things. He does not call it water only, or earth only, for fear that Primordial Matter might be considered as really earth or water. Nevertheless,

[1] 'Impossibile est dicere quod informitas materiae tempore praecesserit vel formationem ipsius vel distinctionem. Et de formatione quidem manifestum est. Si enim materia informis praecessit duratione, haec erat jam in actu; hoc enim creatio importat. Creationis enim terminus est ens actu; ipsum autem quod est actus, est forma. Dicere igitur materiam praecedere sine forma, est dicere ens actu sine actu, quod implicat contradictionem. Nec etiam potest dici, quod habuit aliquam formam communem, et postmodum supervenerunt ei formae diversae, quibus sit distincta. Quia hoc esset idem cum opinione antiquorum naturalium, qui posuerunt materiam primam esse aliquod corpus in actu, puta ignem, aerem, aut aquam, aut aliquod medium: ex quo sequebatur quod fieri non esset nisi alterari. Quia, cum illa forma praecedens daret esse actu in genere substantiae, et faceret esse hoc aliquid, sequebatur quod superveniens forma non faceret simpliciter ens actu, sed ens actu hoc, quod est proprium formae accidentalis; et sic sequentes formae essent accidentia, secundum quae non attenditur generatio, sed alteratio. Unde oportet dicere, quod materia prima neque fuit creata omnino sine forma, neque sub forma una communi, sed sub formis distinctis. Et ita, si informitas materiae referatur ad conditionem primae materiae, quae secundum se non habet aliquam formam, informitas materiae non praecessit formationem seu distinctionem ipsius tempore, ut Augustinus dicit loc. cit. supra, sed origine seu natura tantum, eo modo quo potentia est prior actu, et pars toto.' 1ae lxvi, 1, *o*.

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it has a resemblance to earth, seeing that it is the substratum of forms; and to water, inasmuch as it has an aptitude to be informed by different forms. The earth, then, is '*void and empty*,' or invisible, and incomposite, for the reason that Matter is cognized by means of the form. Hence, considered in itself, it is said to be invisible, or empty; and its potentiality is fulfilled by the form[1].' St. Thomas does not flinch, one may see, even before the seeming authority of St. Augustine; but stoutly maintains his point, that Primordial Matter could not possibly have preceded substance in order of time. Neither, retorts the Doctor, could St. Augustine have meant to suggest anything of the kind. It is plain, on the contrary, that he considered Matter to be unintelligible and empty of existing reality without form. Consequently, he could not have supposed its pre-existence in its unformedness.

Let us now proceed to determine, whether the teaching of the Angelic Doctor confirms the conclusions touching the reality of Primordial Matter, which are embodied in the *hundred and forty-second, hundred and forty-third, and hundred and forty-fourth* Propositions. It is there maintained, first of all, that Primordial Matter, as existing under its actuating form in the constituted composite, has a real substantial entity really distinct from the entity of its form; and consequently that, considered in and by itself, it has an imperfect entity and existence of its own, though with intrinsic dependence on the form in both cases. Now, as to the first point, the opinion of St. Thomas has been unequivocally declared in the passages already quoted. For, when he asserts that Primordial Matter is the most imperfect of all entities and, again, that it is incapable of generation and was therefore created, he manifestly implies that it has some real entity of its own; and when he further proceeds to declare that it could not have existed alone but must have been concreated with its forms, he virtually asserts its necessary dependence on form for its entity and exist-

[1] 'Augustinus enim vult quod nomine terrae et aquae significetur in hoc loco ipsa materia prima. Non enim poterat Moyses rudi populo materiam primam exprimere nisi sub similitudine rerum eis notarum. Unde et sub multiplici similitudine eam exprimit, non vocans eam tantum aquam, vel tantum terram, ne videatur secundum rei veritatem materia prima esse vel terra vel aqua. Habet tamen similitudinem cum terra, in quantum subsidet formis; et cum aqua, in quantum est apta formari diversis formis. Secundum hoc ergo dicitur terra inanis et vacua, vel invisibilis et incomposita, quia materia per formam cognoscitur. Unde in se considerata dicitur invisibilis vel inanis; et ejus potentia per formam repletur.' 1ae lxvi, 1, 1m.

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ence. Furthermore: The passages about to be quoted in order to exhibit the teaching of St. Thomas as to the second point, will *à fortiori* establish the truth of the first. For, if Matter, considered as it is in itself apart from the form, has its own partial entity; taking into consideration that it is first Subject and universal recipient of bodily forms, it must retain that same entity in complete substance. In confirmation, then, of the second point, let us hear what St. Thomas has to reveal concerning the reality of Primordial Matter. 'That is called Primordial Matter,' he writes, 'which is in the Category of Substance, as a sort of potentiality, cognized apart from species and form and even privation; but, nevertheless, susceptive of forms and privations[1].' Now, the description here given leaves no doubt, that the Doctor is speaking of Primordial Matter considered apart from all form. Yet of it he declares that it is in the Category of Substance; while, on the other hand, we know that none but real things find a place in the Categories. Then again, he adds that it is really susceptive of forms and privations. But *nothingness* is not in a condition to receive either the one or the other. Proceed we to another passage: 'Although Primordial Matter is without form; nevertheless, there is in it an imitation of the First Form. For, however weak the being that it has; still, that being is an imitation of the First Being[2].' Here again, there can be no doubt that the writer is alluding to Primordial Matter in and by itself; yet he compares it with God, and declares that its being is an imitation of His Being. Therefore, it has a being of its own. Once again: In pursuance of the same line of thought, St. Thomas makes elsewhere the following striking observation: 'When Avicebron argues thus: There is some Entity which is cause of motion, itself unmoved, to wit, the First Maker of things, therefore, there is something which is moved and acted upon only; his conclusion must be granted. But this is Primordial Matter, which is pure potentiality; just as God is pure Act[3].' In the above passage St. Thomas contrasts

[1] 'Id communiter materia prima nominatur quod est in genere substantiae, ut potentia quaedam intellecta praeter omnem speciem et formam, et etiam praeter privationem; quae tamen est susceptiva et formarum et privationum; ut patet per Augustinum . . . et per Philosophum.' *Spiritu. a.* 1, *c. in init.*

[2] 'Quamvis materia prima sit informis, tamen inest ei imitatio primae formae: quantumcunque enim debile esse habeat, illud tamen est imitatio primi entis.' *Verit. Q.* iii, *a.* 5, 1m.

[3] 'Sciendum est tamen, quod cum Avicebron sic argumentatur: *Est aliquid quod*

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Primordial Matter with God,—taking (so to speak) the two opposite poles of Being,—God, the infinitely Perfect, pure Act, first efficient Cause, Immutable, on the one hand; and Primordial Matter, the most imperfect, pure passive potentiality, efficient of nothing, subject to the causality of all bodily forms, on the other. But the argument of Avicebron would be utterly nugatory, if Primordial Matter had no entity of its own. Yet St. Thomas acknowledges its validity; and on the strength of it institutes the comparison alluded to above. Once more: In a parallel passage, the Angelic Doctor returns to the same contrast, in order to put in clearer evidence the pure potentiality of Matter. These are his words: 'Primordial Matter which is the first recipient holds the same place relatively to passive potentiality, as God Who is first Agent holds relatively to active potentiality. Wherefore, Matter is its own passive potentiality; as God is His own active Potentiality[1].' The argument needs no elucidation. But it is of importance to notice that, when God is said to be His own active Potentiality, *active Potentiality* is identified by St. Thomas with pure act. All idea of mere facultative capacity, capable of a perfecting act though not itself in act, must be here rigorously excluded; otherwise, God could not be pure Act; and (which is, of course, a secondary consideration) the contrast instituted would suffer. To add one other quotation:—St. Thomas writes, 'Matter, if its nature could be defined, would have for difference simply its relation to form; and for genus, merely its substantiality[2].' There cannot be a doubt that St. Thomas is here considering Primordial Matter in and of itself; for, considered as existing in the integral composite, its relation would not be to form in general but to *this* specific form. In the imagined definition, then, he ranges Matter under the Category of Substance; while he assumes for difference its essential intrinsic dependence on form. The reason of this is, that an incomplete, as opposed to complete substance, is differentiated by its

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est movens non motum, scilicet primus factor rerum; ergo ex opposito est aliquid quod est motum et patiens tantum; hoc concedendum est. Sed hoc est materia prima, quae est potentia pura, sicut Deus est actus purus.' 1^ae^ cxv, 1, 2^m^.

[1] 'Hoc modo se habet materia prima, quae est primum recipiens, ad potentiam passivam; sicut se habet Deus, qui est primum agens, ad potentiam activam. Et ideo materia est sua potentia passiva, sicut et Deus sua potentia activa.' 1 *d.* iii, *Q.* 4, *a.* 2, 4^m^.

[2] 'Materia autem, si ejus essentia definiretur, haberet pro differentia ipsum suum ordinem ad formam, et pro genere ipsam suam substantiam.' *Quol.* ix, *a.* 6, 3^m^.

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dependence on a partner substantial constituent; while, of the two incomplete substances, Matter is distinguished from form, in that its dependence on this latter is one of pure receptivity or passive potentiality.

It now remains to show the correspondence between the teaching of the Angelic Doctor and that given in the *hundred and forty-fifth* Proposition and in the accompanying Corollaries. It is maintained in that Proposition that, though Primordial Matter is not a pure potentiality in such sense as to exclude any even metaphysical act, still it is truly denominated a pure potentiality in respect of form of whatsoever kind. In the third Corollary it is further stated, that Matter is naturally ungenerated, ungenerative, indivisible, incorruptible, indestructible. In the fourth Corollary it is added that Matter cannot exist, save under the actuation of some form. The first and second Corollaries have here been purposely omitted; because the latter is purely technological, while the subject of the former requires, and will receive, separate consideration. Previously to tracing this conformity, it will be of advantage to introduce a passage from St. Thomas, which will throw considerable light on the Scholastic use of the two terms, *potentiality* and *act*. 'To be the first potentiality,' writes the Doctor, 'does not correspond with Matter according to the original signification of the word; because the word, *potentiality*, was primarily instituted to signify the principiant of action. But secondarily, in a transferred sense that also which receives the action of the agent is said to have potentiality. And this is passive potentiality. So then, as operation or action, in which active potentiality finds its complement, answers to active potentiality; in like manner, that which answers to passive potentiality, as being its perfection and complement, is called act. It is for this reason, that every form is called an act,—even the separate forms themselves[1].' In the instance of these latter, however.—that is to say, of separate or pure forms,—it must not be supposed that the term is used in the sense of a *physical* act;

[1] 'Esse primam potentiam non convenit materiae secundum principalem significationem potentiae; quia, ut dictum est in corp. art., potentia primo imposita est ad significandum principium actionis; sed secundo translatum est ad hoc, ut illud etiam quod recipit actionem agentis, potentiam habere dicatur. Et haec est potentia passiva. Ut, sicut potentiae activae respondet operatio vel actio, in qua completur potentia activa; ita etiam illud quod respondet potentiae passivae, quasi perfectio et complementum, actus dicatur. Et propter hoc omnis forma actus dicitur, etiam ipsae formae separatae.' 1 *d.* xlii, *Q.* 1, *a.* 1, 1^m.

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as it is in the case of bodily forms, or imperfect substances. For these latter physically inform and actuate the Matter; while the former are separate from it and are complete in themselves. They are, nevertheless, *metaphysically* acts; forasmuch as their objective potentiality is conceived to be actuated by their existence.

It is a clear deduction from the above that, according to the mind of St. Thomas, Primordial Matter is a pure potentiality relatively to informing forms, (incomplete substances), and in comparison with separate forms, (complete substances). But the Angelic Doctor is yet more explicit elsewhere. For, first of all, he tells us, 'The act, relatively to which Primordial Matter is in potentiality, is the substantial form. Wherefore, the potentiality of Matter is no other than its essence[1].' So again, in regard of the substantial composite: 'Properly speaking,' he writes, 'that which is in potentiality to substantial Being is called Primordial Matter[2].' To these passages may be added the greater number of those already quoted in this Section; wherein it is asserted that Primordial Matter is a pure potentiality in relation to its form. That St. Thomas gives his *imprimatur* to the third Corollary, will appear from the following quotations. 'You must know,' he writes, 'that Primordial Matter is neither generated nor subject to corruption[3].' In another place he introduces with approval the authority of the Philosopher: 'Aristotle proves that Matter was not generated, because it has no Subject from which it can be derived[4];' in other words, as Primordial Matter is the first Subject, it cannot be generated, because generation postulates a subject of the generating act. Again: Touching its incorruptibility he writes: 'In whatsoever entities there is composition of potentiality and act, that which holds the place of primary potentiality or first subject is incorruptible. Hence, even in corruptible bodies Primordial Matter is incorruptible[5].' He adds the words, '*even in corruptible*

[1] 'Actus ad quem est in potentia materia prima, est substantialis forma; et ideo potentia materiae non est aliud quam ejus essentia.' 1ae lxxvii, 1, 2m.

[2] 'Proprie loquendo, illud quod est in potentia ad esse substantiale, dicitur materia prima.' *Opusc. XXXI, (al. XXVII), in init.*

[3] 'Sciendum est quod materia prima, et etiam forma, non generatur neque corrumpitur.' *Ibidem, versus med.*

[4] 'Aristoteles in 1 Physic. probat materiam esse ingenitam, per hoc quod non habet subjectum de quo sit.' 1ae xlvi, 1, 3m.

[5] 'In quibuscunque est compositio potentiae et actus, id quod tenet locum primae potentiae sive primi subjecti, est incorruptibile. Unde etiam in substantiis corruptibilibus, materia prima est incorruptibilis.' *Cg. L. II, c°, 55.*

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bodies,' in contradistinction to the heavenly bodies, which in his time were supposed to be incorruptible. Finally, let us hear what he has to say touching the indivisibility of Primordial Matter. 'It is not in accordance with Matter,' he writes, 'to be divided into parts, save in so far as it is cognized under quantity; on this latter being removed, there remains an indivisible substance[1].' There is another striking passage to the same effect, which shall be set before the reader. But that its bearings may be the more readily grasped, it is necessary to explain in few words the subject of discussion. St. Thomas is occupied in proving that there cannot be more than one Angel of the same species; and, in consequence, that each Angel must be specifically distinct from every other. He proves this, first of all, on the hypothesis that they are immaterial. He then proceeds to argue that, even if they should be material and composite, (provided that the supposed Matter of which they are composed be not corporeal, earthly), we must arrive at a like conclusion. For,—now we proceed to quote his words,—'In the instance of all those entities whose Matter is assumed to differ entitatively, if that Matter is of the same order in both, (as, for instance, the Matter of entities subject to generation and corruption is one), it must needs be that the diverse forms by which it receives diverse Being should be received in diverse portions of Matter. For one portion of Matter cannot, at one and the same time, receive opposite and disparate forms. But it is impossible to cognize diverse portions of Matter, unless there be previously cognized in Matter dimensive quantity, at least indeterminate,' (that is to say, as represented in the concept), 'by intervention of which it can be divided; as the Commentator' (Averrhöes) 'says in his Work on *the Substance of the world*, and in his Commentary on *the first Book of the Physics*. The reason of this is, that, on the separation of quantity from substance, the latter remains indivisible, as the Philosopher says in the first Book of his *Physics*[2].'

[1] 'Materiam autem dividi in partes non convenit, nisi secundum quod intelligitur sub quantitate; qua remota, remanet substantia indivisibilis, ut dicitur' 1ª° L, 2, c.

[2] 'Quorumcumque materia secundum esse differre ponitur, oportet, si ista materia est ejusdem ordinis in utroque, (sicut materia generabilium et corruptibilium est una), quod diversae formae secundum quas diversum esse accipit, recipiantur in diversis partibus materiae. Non enim una pars materiae diversas formas oppositas et disparatas simul recipere potest. Sed impossibile est in materia intelligere diversas partes, nisi praeintelligatur in materia quantitas dimensiva, ad minus interminata, per quam dividatur, ut dicit Commentator in libro de substantia Orbis, et in 1 Physic., quia,

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This passage has been quoted at length, because it lends the weighty authority of St. Thomas to three important propositions. For it is therein declared, not only that Primordial Matter is indivisible, but also that it is one and the same in all sublunary bodies; and, finally, that one and the same portion of Matter cannot at the same time receive opposite and disparate forms. To this last may be added, that, (as will be seen later), the same portion of Matter cannot at the same time be actuated by two substantial forms even of the same species; otherwise, either Matter would cease to be the principle of individuation in the sense explained in the third Book, or, there could be two essences in the same individual. That the being of Matter is essentially dependent on the form, is categorically affirmed by St. Thomas. 'Form gives being to Matter[1],' are his words. So, again, 'You must also know that, though Primordial Matter does not include in its essential concept any form; . . . nevertheless, it is never stripped of form; because of itself it can never exist. For, seeing that it includes no form in its essential concept, it cannot be in act; since to be in act, can result only from the form. It is, therefore, only in potentiality[2].'

§ 4.

DIFFICULTIES.

As the difficulties and objections urged against the doctrine contained in this Article are of more than ordinary interest and importance, and as they are also not a little heterogeneous; it has seemed good, (as we have already forewarned the reader), to collect them in one under a separate Section. Some there are, which directly or indirectly impugn the entire Scholastic teaching touching the existence and nature of Primordial Matter; while others are directed against one or other of the Propositions in particular. The whole doctrine is indirectly attacked, by the proposal and advocacy of other theories in preference to that which has universally obtained in the School; directly, by arguments that impugn

separata quantitate a substantia, remanet indivisibilis, ut in 1 Physic. Philosophus dicit.' 2 *d.* iii, *Q.* 1, *a.* 4, *c.*

[1] 'Simpliciter loquendo, forma dat esse materiae.' *Opusc. XXXI, (aliter XXVII), init.* See the whole of this treatise.

[2] 'Sciendum etiam, quod licet materia prima non habeat in sua ratione aliquam formam, . . . materia tamen nunquam denudatur a forma. . . . Per se autem nunquam potest esse; quia, cum in ratione sua non habeat aliquam formam, non potest esse in actu, cum esse actu non sit nisi a forma; sed est solum in potentia.' *Ibidem, v. med.*

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the existence or nature of Primordial Matter as understood and taught by the Scholastics. Accordingly, there are three classes of difficulties, which shall be taken in the order just given.

A. THE FIRST CLASS includes *the principal rival theories which have been proposed in place of the Scholastic doctrine.* Now, there are two ways in which such proposals may be made. A theory touching the ultimate constituents of bodily substance may be advocated, simply on the ground that it satisfies the needs of physical inquiry and corresponds most nearly with the experience of sensile phenomena; quite irrespectively of ulterior metaphysical examination into the essences of such entities. Thus presented, it cannot be justly treated as antagonistic to the teaching of the School, or as a difficulty to be confronted; and the sole duty of metaphysics in such case will be to see, whether it satisfies those universal principles of human thought and of ontological truth, to which all knowledge, scientific or other, must conform. But again, the same theory may be proposed as a professed solution of the metaphysical problem, and be avowedly set up in opposition to the Scholastic theory; and then it confronts us as a stumbling-block to be removed out of the way. These theories, therefore, as they are presented in succession before the reader, will be submitted to this twofold treatment. It will concern us to know whether and how far they are tenable in themselves *as physical theories*, and whether they afford a satisfactory answer to the metaphysical problem. It is hardly necessary to repeat, that the present examination is metaphysical. Of course, every theory concerning the ultimate constitution of bodies should fit in with the latest discoveries of physical science. On the other hand, physical theories, (so to term them), must answer to another and higher requirement. They must harmonize with those universal laws of thought, from which no dispensation is possible. It is most necessary to insist again and again on this important condition.

I. The theory which is among the earliest,—and has been, under one form or another, the most persistent,—is the purely ATOMIC; according to which, the ultimate constituents of all bodies are supposed to be *atoms*, that is, indivisible substances. Hence the name. There are two separate questions which are essentially included under this, as under every other, theory concerning the constitution of material substances. These concern, the one that which

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may be called the matter, the other the form, of corporal consistence. The former regards the atoms themselves; the latter, the principle of atomic union. Let us consider the two apart; for as to each there has been, during the progress of the ages, considerable variety of opinion. i. Touching the atoms themselves, some maintain that they are only mechanically or physically indivisible. Such would seem to have been the idea of Democritus, of Epicurus, and in our own day, of Sir William Thomson. According to others,—Boscovich, for instance, and Leibnitz,—they are mathematically indivisible. The former would consonantly admit, that the atoms might have integrating parts; and would certainly have extension, dimensions, shape. The latter, on the contrary, maintain, that these atoms are mathematical points, without extension either intrinsic or extrinsic, without dimensions, without shape. According to one theory, the number of these atoms is finite; according to another, —that, for instance, of Anaxagoras,—their number is finite in each separate body, but infinite in nature as a whole; while, according to a third, of which Leibnitz (not to mention others) is an advocate, the number is infinite in each body,—nay, as Leibnitz maintains, in each particle of a body. Again: Some,—for instance, Democritus,—teach that these atoms, or corpuscles, are all homogeneous; others, as Anaxagoras, that they are partly homogeneous, partly heterogeneous, while Leibnitz asserts that each atom is different from its neighbour. Lastly, according to one theory, the atoms have only extrinsic motion in space. Such would seem to have been the idea of the ancient atomists, and certainly was the idea of Boscovich. According to another theory, the atoms have only intrinsic motion, such as Leibnitz attributes to his *Monads*; according to a third, they have both local and intrinsic motion, as in the vortex rings of Helmholtz, assumed by Sir William Thomson to be the true form and nature of the atom. ii. As the atomic physicists differ respectively in their account of the atoms themselves; so they likewise differ in the principle of their union, by virtue of which they coalesce to form a particular body. Democritus attributes it to a fortuitous concourse; Anaxagoras, to commixture and separation; Leibnitz, to a pre-established harmony; Sir William Thomson, to the varied vibrations, 'knottedness,' and 'linkedness' of the vortex rings.

Setting aside, for the moment, the specific differences in these multiform theories and assuming the atomic theory, under its

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generic form, as teaching that the ultimate constituents of bodily substance are atoms, or physically indivisible entities, this theory seems to commend itself by its correspondence with the experience of the senses and the phenomena of nature. For it is plain to sense that every body, potentially *at least*, consists of integrating parts which, up to a certain point, are capable of actual mechanical separation. Those mechanically separated parts admit of further subdivision; and these subdivided parts can be further subdivided, till we reach the limit of division. The result are atoms; that isto say, elements incapable of ulterior physical division. We are told, that 'the smallest organized particle under the microscope contains about two million molecules of organic matter[1].' There are about five million red corpuscles in a cubic millimetre of blood. Both these calculations are conclusions based on *certain* facts of experience. If these molecules are not the last, (which chemically they cannot be, because themselves composed of atoms), they must at all events contain the ultimates. Further, the science of chemistry is founded upon the supposition, that the ultimates in the constitution of bodily substance are atoms; and long-continued experiments in every direction and of every kind only add fresh force to the truth of the hypothesis. Finally, it is perhaps the oldest-known theory; nevertheless, it has managed to hold its own to the present hour.

Answer. It cannot be denied that there must be some element of truth in the atomic theory; otherwise, it would be impossible to account for its persistent hold on the minds of men, subsequently even to all the modern advances in physical discovery. But, though true perhaps as far as it goes, it is not *satisfactory*. Let us begin our examination, by reducing the number of its divergent systems. We must at once eliminate all such as ascribe infinite number to these atoms, either collectively, or in each separate body. For these atoms, infinite in number, are indivisible either physically only or mathematically also. But, in either case, the world would necessarily assume an infinite magnitude; which is repugnant to reason. Therefore, etc. *The Minor* is thus proved in either hypothesis. If the atoms are only physically indivisible; they have, each of them, a certain extension and therefore a certain magnitude. The number being infinite, as is supposed; that magnitude must be multiplied to infinity. If, on the other hand, they are also mathematically indivisible, in order to be able to conceive of

[1] *Encyclop. Brit.* (9th ed.) under the word, '*Atomic.*'

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extension, it is necessary to admit certain intervals of space between them. But these intervals of space must be infinitely multiplied, in order to correspond with the infinite number of atoms; and would thus necessitate an infinite magnitude in the whole collection. It will, further, be necessary to eliminate all such systems as suppose the said atoms to be mathematical points. For mathematical points can have no independent physical existence. In so far as they are accounted real entities at all, (for about this there is a controversy in the Schools), they belong to the Category of Quantity and, save by an act of the Divine Omnipotence, could not be separated from the line which is their immediate, nor from the material substance which is their ultimate, Subject. The mathematical point must, therefore, be accompanied by the material substance which it presupposes. Thus we are not only landed in a composite; but we find an accident,—that is to say, a quantitative element,—proposed as sole ultimate of a substance. If, however, it should be objected that this argument is of little account, since it is based on the Peripatetic metaphysics and thus amounts in some sort to a begging of the question; let us, by way of reply, gauge our mathematical point, or atom, by a more modern measurement. In our recent systems of philosophy, quantity is not considered to be an accident really distinct from material substance; nor are points, lines, superficies, and other geometrical entities, treated as other than intellectual abstractions,—derived from the dimensions and shapes of bodies,—having no real existence, or possibility of real existence, apart from those bodies. Judged, then, by this standard, these mathematical points would fare worse than under the old philosophy. For they would be denudéd of all reality *in themselves;* accordingly, the visible or material world would be made up of an aggregate of abstract concepts. Thus this form of materialism resolves itself into a species of mathematical idealism. Betaking ourselves now to the formal principle of union, it will be necessary to eliminate the Democritan dream of a *fortuitous concourse*, as being in direct contravention of the principle of causality. We must likewise reject the Leibnitzian theory of a *pre-established harmony*. For it is unphilosophical to attribute all the mutations, transformations, generations, and corruptions of bodies to the *immediate* operation of an *external* law Divinely pre-established, rather than to that of natural causes and of a constant order *intrinsic* in the material entities themselves.

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Having thus reduced the number of atomic theories by retaining those only which *prima facie* are philosophically tenable, it remains to institute a critique of the atomic theory in general. Looking at it, then, metaphysically, it is a failure; (i.) because it does not reach the ultimate constituents of bodies. First of all, it does not even reach their ultimate *integrating* parts; though it may approximate to those ultimates enough for the practical purposes of physics, on the hypothesis that their projection subserves these purposes, which is a subject of grave doubt. The plain reason why it cannot reach the ultimate integrating parts is, that the feat is simply impossible. For quantity and quantified material substances are indefinitely divisible. So long as there is extension,—part outside part,—further division is possible; and any integrant part, however minute, of any body must have extension. You cannot, however persevering may be your efforts, mince extended bodies into mathematical points. It is true, St. Thomas admits that physically it is possible to reach an ultimate beyond which division is impossible. But if such ultimate could practically be attained; what would be its condition? It is obvious that so long as the substance is informed by quantity, it is physically capable of further division; because it has part outside part in space. Wherefore, the said ultimate would have been denuded of its quantification, and consequently would cease to be a body, though remaining in some way or other an integral material substance. Secondly,—and this is far more important,—it does not touch the essential, or substantial, ultimates of bodies. For, as has been observed before, the atom, even if we suppose it to be a *bona fide* atom, remains a complete substance. To resume a former illustration,—*an infinitesimal atom of carbon is as much carbon as a mountain of it would be; just as a crumb is as much bread as a loaf.* Further: If the original atoms, out of which all things are supposed to be formed, are heterogeneous; there is evidently something common to all, in that all are called, and are, atoms,—that is to say, physical ultimates of bodies, or material substances. On the other hand, there is also something by which they are gathered into separate groups and mutually distinguished. Hence, there is composition of some sort. But, if these atoms are composite like the substances they go to form, we have not touched upon the ultimate constituents by this mechanical disintegration, even carried on to its physical limit. If, on the contrary, the atoms are to be homogeneous, they still essentially require some

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fundamental principle of distinction, in order to satisfy for the all but infinite multiplicity of material entities. Therefore, in their case we have not neared the ultimates. It is for this reason that Aristotle, in the first Book of the *Metaphysics*, justly lays it to the charge of the atomistic philosophers who had preceded him, that they limited themselves to the Material, and entirely ignored the Formal, Cause. As a consequence, (ii.) the purely atomic theory does not satisfactorily account for the greater part of physical phenomena. It fails to explain chemical combinations. One can see, indeed, how a concourse or commingling of atoms may possibly multiply to an indefinite extent the external forms, or shapes, of bodies; and thus afford ground for individual distinction. But all this is purely accidental. Let us go on to put the following questions: How does it happen that there are two collections of atoms,—each collection with a nature and properties distinctively its own; that these two collections coalesce, and from that coalition arises a new nature distinct from either both in its essence and in its properties, as in the instance of hydrogen and oxygen which, in due combination, produce water? How is it that other collections of atoms offer themselves to no such combination? How is it, again, that the same species of atoms will not combine, if the necessary proportion is wanting; or only coalesce up to the measure of such proportion, and not beyond? Again: Why is there only mechanical mixture in one case, while there is chemical combination in another? It may, perhaps, be argued, that the circumstance of the atoms so coalescing being heterogeneous would account for these and similar phenomena. We answer to this that, unless under the term, *heterogeneous*, there should be included something beyond the mere nature of the atoms, it would in no way suffice to explain these phenomena. Introduce, indeed, forces of attraction and repulsion; there might then be something in the objection. But forces are not atoms. They are, if anything, properties of atoms; and their introduction lands us outside the purely atomic theory. Once more: This theory affords no explanation of the phenomena of generation and corruption. Why is ancestral generation, under one form or another, necessary to the production of all living things; while inanimate substances are subject to no such law? How is it, again, that an animal is at one moment alive, at another dead, without any sensible dissociation of the component atoms? Finally: The atomic theory is deficient from a merely physical

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point of view. For this division of composite bodies into molecules, and of elements into atoms, is purely mechanical. It only minimizes mass; it does not analyze substance. Nor is there, so far as one can see, the slightest foundation in reason or experience for supposing, that either molecules or atoms primordially existed *as* molecules or atoms, and were afterwards united by coalition or otherwise into masses of bodily substance. Rather, everything points the other way.

II. Another early theory, proposed by Empedocles and others, is the ELEMENTAL theory; in which it is maintained that the original materials of the visible creation were certain simple elements, from the varied admixture of which all bodies have been subsequently formed. It is clearly not necessary for a modern disciple of this theory to adopt as his own the four particular elements, so called, which were signalized in the olden time;—to wit, fire, air, water, earth. He would doubtless prefer to select the sixty odd elements which have been proclaimed as such by modern chemistry. This theory commends itself by its apparent correspondence with the things of nature. Assuming, for the sake of illustration, the truth of the nebular theory, and that material substance settles down into all its complexity of form as the result of secular refrigeration; it is plain that the gases with which creation began were in volume, not in separate, isolated, unordered atoms. This may be safely affirmed, without prejudice to the further question whether the component atoms are contiguous to one another or no. That which is here maintained, is simply this: Atoms did not primordially exist in a state of independent isolation, like dots confusedly made upon a piece of paper; but were created from the beginning in family groups, as constituents severally of volumes of distinct elements,—say, of hydrogen, carbon, calcium, and the rest. From their mutual and progressively complex combination, it is easy to understand how all the multifarious bodies, distinct in nature and properties, should have originated. Further: Atoms, if they naturally exist, are at the best mere accidents of material substance; but element is distinct from element in its own substantial nature.

ANSWER. Treating the subject *genetically*,—that is to say, considering exclusively the actual genesis of the things of nature,—there are grave reasons, (already in part suggested), why the metaphysician should range himself on the side of the elemental, rather than on that of the atomic theory, that is to say, as far as it goes; for it needs

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completion. But, if we are to take the theory as a *metaphysical* exponent of the ultimate constituents of material entities, it is obnoxious to most of the objections that have been urged against the atomic theory; to which must be added another peculiar to itself. For nothing can be an ultimate, which is composed of integrating parts; since the parts are prior in order of nature to the whole. This difficulty, it is true, has been already urged against the atom; but in the instance of the latter an effort at least has been made, however unsuccessful, to reach the ultimate integral. In the elemental theory, on the other hand, the elements are assumed in their primitive or genetic constitution, and not as resolved into their integrating parts. Therefore, this theory leaves us further removed from the integral ultimate than the atomic; while it throws no light whatsoever on the substantial components, for it begins with the complete composite. Again: It is chargeable with an omission, common to it and the preceding theory. The sole force, by virtue of which the atoms or elements concur, coalesce, or mingle, must be a force of extrinsic motion (that is to say, of motion that has an external *other* for its term); so that the coalition of the constituents is exclusively mechanical. But this leaves us in an utter incapacity to explain, or account for, the elaborate complexity of organized structures or the manifold transformations in nature.

III. The Dynamic theory is in high favour at the present time, more particularly with those whose minds have been specially trained to mathematical studies. It teaches, that material substances are simply constituted by varied combinations of *forces*. A force, therefore, is the ultimate of which we are in search. Here will be the place to introduce the system of Boscovich, who may justly claim to be the father of dynamical theories; though his own is not purely dynamic and therefore, has been already alluded to under the atomic theory. He would appear to have maintained that all bodies were made up of atoms, really and mathematically such. These atoms 'are wholly indivisible points, devoid of extension, which have been dispersed in an unmeasured vacuum after such manner that each pair are separated from each other by a certain interval which can be indefinitely increased or diminished, but can never vanish altogether, without compenetration of the points themselves; for I do not admit,' they are the words of Boscovich, 'that their contact is possible in any way[1].' Thus these atoms have no exten-

[1] 'Prima elementa materiae mihi sunt puncta prorsus indivisibilia, et inextensa, quae

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sion, but are mathematical points, yet, 'each point,' says the author of this theory, 'has a real mode of existence, by which it is there where it is[1],' that is to say, it has its own ubication, or position in space. These atoms are capable of motion in a continuous path, or of comparative rest; which constitutes their *vis inertiae*[2]. Besides this, they are endowed with a force that energizes without, by virtue of which any two atoms either attract or repel each other according to their distance apart; which distance also determines the measure of their force. These points are all homogeneous. A system of these points occupies a certain space, and constitutes a body. The repulsive action of these points wards off those of any other system; since that repulsion is insuperable by any known natural power. All action between points and systems of points is at a distance; for the force produces its effect *immediately* in the point which is the subject of its influence, though mutual contact is impossible. By the variation and combined action of these forces according to a given mathematical law, Boscovich explains the phenomena of impenetrability, gravity, cohesion, elasticity, heat, light, etc.; in a word, all the facts of nature. The learned writer of the Article on *Atom*, in the last edition of the *Encyclopaedia Britannica*, has added to the above description of these points of Boscovich, that they are supposed by their author to possess 'a certain mass, whereby a certain amount of force is required to produce a given change of motion.' While it may perhaps be granted that this assertion is true, if accepted as a logical deduction from the theory in question; yet, it certainly does not correspond with the expressed teaching of Boscovich, who explains *mass* to depend on the number of points combined in any one body, and apparently limits both the idea and its expression to systems of points, not to the points individually, as they are in themselves[3]. Of course, it is difficult to see,

in immenso vacuo ita dispersa sunt, ut bina quaevis a se invicem distent per aliquod intervallum, quod quidem indefinite augeri potest, et minui, sed penitus evanescere non potest, sine compenetratione ipsorum punctorum; eorum enim contiguitatem nullam admitto possibilem.' *Theoria Philosophiae Naturalis, Pars prima, n.* 7.

[1] 'Quodlibet punctum habet modum realem existendi, per quem est ibi, ubi est.' *Ibid. Supplementa*, § 1, *n.* 4.

[2] 'In hisce punctis admitto determinationem perseverandi in eodem statu quietis, vel motus uniformis in directum in quo semel sint posita, si seorsum singula in natura existant.' *Ibidem, Pars prima, n.* 8.

[3] 'Massa corporis est tota quantitas materiae pertinentis ad id corpus, quae quidem mihi erit ipse numerus punctorum pertinentium ad illud corpus.' *Ibidem, Pars tertia, n.* 378. 'Massa est ut factum ex mole et densitate: moles ut massa divisa per densitatem.' *Ibidem, n.* 381.

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save in a mathematical diagram, how a mathematical point can be subjected to, or potential of, physical attraction and repulsion; but it is necessary to take Boscovich as we find him, and one can hardly imagine his admitting the compossibility of mass with a mathematical point.

Taking, then, this theory as it stands, we are justified in eliminating the points, as being, indeed, a mathematical necessity but a physical impossibility. For how can a mathematical point have a separate existence or an independent entity? It is a further puzzle to understand how a mathematical point, even were it capable of separate existence, could possess a *real* position in space; or how an infinite number of such points could constitute mass and volume.

If, then, we make abstraction of these points, we are in presence of a purely dynamic theory, according to which the ultimate elements of bodies are forces energizing spherically without limit, unless restrained by the counteraction of other causes. These forces are either, (as Boscovich would have it), of one kind, attracting or repelling according to relation of distance from their centre; or (as others maintain), of two kinds,—the one attractive and the other repulsive. Each force, though physically a simple entity, is metaphysically composed of Matter and form. The centre of the force, inert, passive, receptive of impressions, is the Matter; while the form is the force itself as capable of causing motion in another. The action of force on force is immediate, but at a distance; that is to say, though the Subject of the action is distant from the energizing force, there is no communication of motion by means of intervening entities and no physical efflux from one to the other, but the whole action is begun and completed in the subject-force or point. A conspiration, or system, of such forces constitutes the material part of a molecule. The form of the molecule is the determination of all the component, or rather conspiring, forces to an oscillatory movement round one common centre. Out of these molecules, of course, bodies are formed.

This theory is far nobler than either of those hitherto considered; for we are supplied with that which we have desiderated in the other two. It is easier now to understand the *wherefore* of chemical combinations, how substances are grouped in themselves, how mutually distinct. No longer are we in presence of an inert mass, capable of only communicated motion; for we are presented with

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a spontaneous activity, attracting, repelling, and accordingly combining, assimilating, distinguishing, in all directions. It introduces us to heat, light, electricity, magnetism, galvanism, as conspicuous agents in the laboratory of nature. It would seem to harmonize in an especial manner with the undulatory theory of light, while extending that principle to other phenomena. It satisfactorily explains the difference between solid, liquid, and gaseous bodies, and the reason of their mutual transformation; while the all but universal porousness of solid bodies supplies a strong argument in its favour. Moreover: The existence of forces in the material universe, is so incontestable,—established as it is by long-continued observation and experiment,—that it would be now impossible to exclude it from any physical theory touching the constitution of bodily substances, which hopes to command any serious attention. Furthermore: The dynamic theory has at least an eye directed towards the formal cause; for the natural action of any agent proceeds from the specific form by which it is constituted. It is not, then, chargeable with that neglect of which Aristotle has accused the two preceding theories. Again: The continued reduction in the number of elements, or simple bodies, as lending probability to their ultimate resolution into one or two, adds greatly to the weight of arguments in its favour. Then, the spontaneous movements in sperm and germ-cells, recently revealed by the microscope, seem to point clearly in the same direction. Lastly: Once allow the theory, straightway all the phenomena of bodies can be subjected to mathematical demonstration or, at the very least, to mathematical analysis.

ANSWER. The last plea, adduced above, in favour of the dynamic theory is one that ought hardly to tell in its favour. For the mathematical science deals exclusively with the laws or forms of quantity, or of quantitative Matter simply *as* quantitative,—that which the School has graced with the title of *intelligible* Matter. Its formal subject-matter, therefore, is not *physically* real, though founded in physical reality. It deals with abstractions, and those abstractions are *metaphysically* real; but, *as* abstractions, they have no existence outside the mind. To explain: There can be no question that a *point*, a *line*, a *superficies*, exist physically in nature; but they exist only as boundaries of quantitative matter. Abstract them from the bodies of which they are, in one

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way or other, the limits; they at once cease to be physically real, because they are incapable of separate existence. To attempt, then, the conversion of any one of these quantitative abstractions into real ultimate constituents of the visible universe, is to violate the established limits of the sciences, and to pave the way for an idealistic philosophy. This is the first metaphysical objection to the theory in question. The said theory is a mathematical dream, dealing with a professed reality. Physical forces there are, without a doubt; but physical forces without a home are wings without a bird, ideas without a mind. This leads us on further to put the inquiry: *What is a force?* If we consult our Dictionaries, we shall find a force described as being 'an active power; power that may be exerted.' It is, therefore, an active potentiality. But a potentiality must necessarily belong to *something*. It is a property,—that is to say, a species of accident,—and accordingly requires a Subject of inhesion. In the instance of no finite being can its active potentiality, or force, be identified with its essence or even part of its essence. Hence, St. Thomas, who is occupied in proving that the faculties, or forces, of the human soul are not identical with the essence of this latter but are accidents inherent in it, observes, 'It is impossible that the proper essence of any created substance should be its operative power' (i.e. active potentiality). 'For it is manifest, that differing acts are acts of differing entities; since an act is always proportioned to that of which it is the act. Now, as being itself is a certain actuality of essence; so, operation is a certain actuation of the operative potentiality, or faculty. For, in this way, each of them is in act,—essence in the way of being, but an active potentiality in the way of operation. Hence, seeing that in no creature is its essence its operation, (for this is peculiar to God alone); it follows, that the operative potentiality of no creature is its essence, but it is the attribute of God alone that His Essence is His power[1].' And, indeed, if the dispute is referred to the tribunal of common sense, the verdict will be in accordance with the teaching of the Angelic Doctor. What would be thought of

[1] 'Impossibile est quod alicujus essentiae creatae sua essentia sit sua potentia operativa. Manifestum est enim quod diversi actus diversorum sunt: semper enim actus proportionatur ei cujus est actus. Sicut autem ipsum esse est actualitas quaedam essentiae, ita operari est actualitas operativae potentiae seu virtutis. Secundum enim hoc, utrumque eorum est in actu; essentia quidem secundum esse, potentia vero secundum operari. Unde, cum in nulla creatura suum operari sit suum esse, sed hoc sit

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a man who should maintain, that the force of the arm, by which a weight is lifted, could naturally exist by itself without either arm or living body; or that the force by which a billiard-player gives motion to his ball could be separated from ball, cue, player, and permeate the earth on its own responsibility? Yet, according to the dynamic theory, the whole creation of nature is nothing but so many *nebulæ* of forces. But now suppose, for the sake of the argument, that these forces could be substances. They are either substantial emanations or they are not. Well then, setting aside the fact that, if they are emanations, they must emanate from something, other than themselves; as emanations, they are (according to the theories in question) spherical, therefore, spherically *extended*. To this, an answer has been suggested. 'They are extended *potentially*,—true; they are *actually* extended,—no.' The reply is plain. If they are only potentially extended, they are only potentially spherical; because *spherical* is a mode of quantity. But, if only *potentially* spherical, they are not in act themselves, but potentially forces; if they are in act, what are they? Mathematical points? An absurdity in itself, and involving the necessary consequence that the force after which they are named is an accident of their being. If they exist as forces, they are of spherical shape and, consequently, extended. But, again: If they are spherical, there must be *something* of which the spherical figure is the limit; because *to be spherical* is a particular mode of extended substance. Yet we are told, that there is vacuum between force and force. In this case what becomes of the spherical? Once more: Each force, we are told, is infinite in its energy till arrested by the action of an opposing force. Thus we are introduced to something that is infinitely spherical,—or, in other words, to an unlimited limit. Yet again: If they are spherical and, therefore, extended, they are composites,—integral wholes composed of integrating parts. We have not, then, reached the ultimate. If they are not emanations, (nor, indeed, do the adherents of these theories pretend that they are); they are nothing, till they act on another. Their existence is relative. Wherefore, one is nothing by itself. It is *pro tanto* a nonentity. But, if one is a nonentity, so must two or

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proprium solius Dei: sequitur quod nullius creaturae operativa potentia sit ejus essentia; sed solius Dei proprium est ut sua essentia sit sua potentia.' *Spiritu. a. xi, in c.* St. Thomas insists on the same truth in *Quol. L. X, a. 5, c.*

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more be; because relation cannot constitute being or essence, neither can substance receive its actuality of Being in another.

The above argument may be, perhaps, proposed more clearly in another form. According to the theories we are at present examining, the ultimate in corporal substance is essentially a mathematical point *plus* an active faculty of causing motion in other points. Now, the point is confessedly (according to one of these theories) nothing physical; nor, whatever the theory may be, could its physical reality be logically maintained. According to the same theory, the active potentiality is in itself nothing physically real. How, then, can two purely metaphysical entities in union constitute a physical reality? But the composition, we are told, is metaphysical; that is to say, a conceptual composition of the essence. So much the better for our argument. How can a potentiality, albeit active, reduce that which is an abstract mathematical concept,—without any physical reality,—to its substantial act; that is to say, constitute it, as the supposed Material Cause, in a specific essence? Itself—to wit, the force—is not an act, because it *is* on the strength of that which is outside itself alike and of its supposed material cause; how can it give act to the point, even if this latter were capable of actuation?

Again: This active potentiality, which stands for form in the said metaphysical composition, is determined in its entire nature to other points. On that particular point which it is supposed to actuate, as the essential form, its active potentiality, which is its entire essence, can do absolutely nothing; for that point is its own centre,—its principle of passivity. Its nature has a transcendental relation exclusively to other points outside, by virtue of which it is reduced to act. Therefore, the result of the union between the force and its point is either a nonentity according to strict metaphysical consideration; or, at the best, a property of nothing,—existing, or conceived to exist, as a mere potentiality by itself. There could be no first act,—the act of being,—for the reasons alleged; and the second act,—the act of operation, by which the active potentiality is actuated, (which in this strange hypothesis *must be* the first act; otherwise, there is no first),—depends wholly on the presence and subjection of another mathematical point.

Again: If, antecedently to its act, a force is the only ultimate in the constitution of bodies, it must be something real. If real, to what Category is it to be assigned? It cannot be an accident;

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for in this case it would require a Subject of inhesion and, accordingly, could not be the ultimate. (The present argument obviously applies to the force *as a whole.*) Can it, then, be a substance? Let us see. A force is constituted,—metaphysically composed,—of two elements, viz. its centre and its energizing potentiality *ad extra.* But confessedly neither of these is real; for both are described as *mental precisions.* Is it possible, (to repeat an argument already suggested), out of the conjunction of two logical abstractions to construct a metaphysical reality which itself shall serve to form a real physical body? A defender of the theory may possibly make answer to this objection that, though a force could not naturally exist by itself, but must co-exist with other forces; nevertheless, each force has a metaphysical entity of its own, and is not, therefore, a mere nonentity. Just as, in the Peripatetic system, neither Primordial Matter can exist without its form nor the form without its Material Cause; so, one point cannot naturally exist without another, yet each has an entity of its own however partial and incomplete. But it will be seen at once that there is no parallel between the two cases. It is a lame comparison. For, first of all, Primordial Matter and the substantial form are two intrinsic constituents of bodily substance, and the latter is first act of the former; whereas one force is extrinsic to the other, and the relation between them of energizing on the one hand and receiving the energy on the other presupposes the actual constitution of each force in its complete entity. Then, secondly, Primordial Matter is something physically real in itself, however imperfect; and the substantial form is something physically real in itself. But neither the one force nor the other is physically real in itself. Nor will it touch the difficulty to say, that a force is metaphysically real. For all metaphysical reality is originally derived from physical realities, and exhibits their essence. But it is of the essence of all potentiality, that in itself it is not actual. Hence, it is metaphysically impossible that one potentiality should actuate another. Finally, it is altogether incongruous that one entity should be formally constituted in being by an entity extraneous to itself.

Once more: It has been urged by the factors of this special development of the dynamic theory,—by way of answer to the objection drawn from the *external* activity of the force,—that its energy is only *potential* in the infinite sphere over which it rules, but that it is *actually*, as substantial form, only in the point of

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which it is the substantial act. This explanation, however, suggests fresh difficulties. How can an active potentiality substantiate anything; since itself presupposes complete substance as its necessary Subject? Then, if it could substantiate anything; how could it substantiate a mathematical point which is hardly more than a *mental precision*? It has been said that the mathematical point, antecedently to its actuation by the special form, is a *subjective potentiality*. But, *contra*, a subjective potentiality is a something physically real yet imperfect in its own category, and substantially perfectible. A mathematical point is not physically real, is metaphysically perfect in its own Category of Quantity, and is supposed by the theory in question to be *essentially* perfected by a quality,—that is to say, out of its own Category. But this is a contradiction in terms, and is justly declared to be impossible by the common consent of the philosophers of the School. Again: How can a point or anything else be constituted in real being by a transient activity whose only formal term is outside? If you abstract from its spherical potentiality and limit it to what it is actually in the mathematical point, its essence is lost. For it is defined to be a cause producing motion outside. It can only give the potentiality that itself has; but in its own central point that potentiality is zero. For answer we are told that the activity of the force 'is neither properly speaking a substance nor a quality, (which is an accident), but an essential and substantial property of the material element.' But, first of all, an essential and substantial property is an accident as much as quality. For an essential and substantial property is a species of accident, flowing from the substantial essence as a sort of entitative corollary, though itself no part of the essence. If, then, this force, or potentiality, is *an essential property of the material element*; in order of nature it presupposes the essence of such element fully constituted. It cannot, then, exercise the functions of the form that constitutes that element. Therefore, either the mathematical point must be the integral essence, in which case the essence is a mere conceptual abstraction; or some other form must be discovered, about which at present we lack information. To conclude this first and principal objection:—It is impossible to make out with philosophical precision what these forces can be, which are commended to our notice by the theory in question as being the real ultimates of corporal substance; and the further the explanation goes, the greater becomes the difficulty.

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The next objection is, that the dynamic theory admits the possibility of the *immediate* action of an efficient cause on the term or subject of that action at a distance. But this is inadmissible; as will be evinced in the fourth Chapter of the present Book.

To these must finally be added the objection already brought against the atomic theories; viz. that the sole formal cause of all whatsoever combinations of material substances is pure motion.

NOTE. The discussion of the question touching the continuity of material substance or of quantity in bodies, which is mooted in the dynamic theory and occupies no unimportant position in it, is reserved for its proper place under the Category of Quantity. Meanwhile, the remark may perhaps be permitted, that the difficulty experienced by some physicists in accepting the teaching of the School on this subject is traceable to a misconception.

IV. THE CHEMICO-ELEMENTAL THEORY supplies the deficiencies which have been signalized in the previous systems; and, if the inquiry is exclusively physical, leaves nothing to desire. It has been called the *chemico-atomic* theory; but the former appellation is much to be preferred. For the atom is rather a mechanical than a physical ultimate; if indeed it can be called an ultimate at all. Divide and subdivide as long as you please, and continue the process by imagination till the calculation of the fraction becomes a burden; you are substantially, even from a purely physical point of view, precisely where you started. It is the same material substance that it was before. What advantage, then, can physical investigation gain by mincing its subject-matter out of sight? Accordingly, if we mistake not, the chemical formulae are now practically interpreted according to the principle of *volume*; and the constitution of complex bodies is attributed to combinations of the elements, or simple bodies, *as such*. According to this theory, then, all bodies consist either of one, (if the body be a simple), or of the mechanical mixture or chemical union of two or more, (if it be a composite), of sixty-five or sixty-six elements, which modern chemistry pronounces to be such. Of course, if it should turn out after all, that these supposed elements are not simple, but capable of further reduction; this would in no way affect the theory, which is, that all bodies are either elements or combinations of elements. It is a further doctrine of this system, that there is no such thing as a vacuum in nature. For Matter is twofold; to wit, that out of which all bodies

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are formed and, secondly, the circumambient ether. The ether interpenetrates all bodies and surrounds them, occupying space. To this latter are attributable the phenomena of light, heat, electricity, magnetism, etc. All bodies are integrally divisible. Reach by mechanical division the physical ultimates, in so far at least as they are appreciable; you have integrant molecules. These molecules are composed of primitive atoms; that is to say, the smallest parts of an element, or simple body, physically appreciable. The molecules are conjoined by molecular attraction, or the physical force of cohesion. The atoms are combined so as to constitute a molecule by chemical force. Heat is the opposite principle, or dissociating force. The atoms of different elements differ in weight, mass, and shape. Each of these atoms, if itself separate, is a separate substance. In this theory, the chemical form, (to adopt an analogical use of the term), is sufficient to account for all the transformations, or substantial mutations, of bodies from a purely physical point of view. The system combines that which is true in the atomic, elemental, and dynamic theories; borrowing from the two former that which may be *physically* called the Matter of bodies, and from the last their form or principle of union. It thus supplements the elemental theory by help of the dynamic, precisely wherein the former exhibits its own fatal deficiency.

Answer. To commence with that which seems to be least solid in the present theory, let us at once betake ourselves to those supposed ultimates which have suggested the name of the chemico-*atomic* theory. These atoms are assumed to be atoms for all practical purposes; but it is certain that, at least to metaphysical consideration, they are not really ultimates. For, as long as there is physical Matter existent, so long there is capability of further division. Now, the greater number of those physicists who adhere to the present theory maintain, that these atoms are physically separate from each other; so that there is no actual contiguity at any one point between any given two. Suppose, then, for the sake of the argument, any given atom to be further divided, (say by the Divine Omnipotence); the disintegrated parts, following the general analogy, must also be in a state of entire isolation each from each. Where is this to stop, save at those ideal mathematical points which drift us into the purely dynamic theory? Two principal arguments have been adduced in favour of this hypothesis of atomic separation; but they do not strike one as conclusive. The one

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is based on the ascertained fact of the porousness of bodies in general. But surely this phenomenon does not necessarily postulate an *absolute* separation; any more than the regular links in a chain suppose entire isolation of the links. The second argument is derived from the elasticity of bodies, and the increased volume of a material substance in a gaseous as compared with a liquid, and in both these as compared with a solid, state. But it starts with the assumption, that there can be no compressibility or capacity for expansion in the ultimates themselves; which requires proof. On the other hand, what are we to say about the circumambient ether? Does it come into physical contact with the atoms that are supposed to be enveloped in it? In such case there is a physical continuity between the atoms through the intervention of the ether. Again: Ether, too, is a material substance. Is it, then, in like manner composed of isolated atoms? If so, there must be vacuum on all sides, which contradicts one important part of the theory as exposed above. If, as some advocates of this theory admit, there are such *vacua*, a greater difficulty arises, which we dismiss for the present. If, on the contrary, ether is not composed of isolated atoms; why is it necessary that one species of material substance should be composed of isolated atoms, while another confessedly is not? Add to this that, in such a hypothesis, the visible creation would be one continuous body, however multiform in its substance. Yet it is precisely this continuity which is most emphatically denied. A defender of the present theory, under a form somewhat different from that which has been given above, maintains that there can be no action at a distance; and asserts it to be commonly held among physicists now, that 'the attractions and repulsions of atoms are effected by the medium of an imponderable elastic fluid which they call ether.' He further adds, 'and, according to a very probable opinion, atoms, (and the same may be said of bodies), so far as the effect is concerned, are associated one with another, as though connected by a sort of elastic spiral, on the contraction of which by compression, the atoms mutually approach each other; on the distension of the same by expansion, they mutually recede.' Yet, in another place, he tells us, that ether also (the supposed elastic spiral) is composed of discontinuous atoms, and that, consequently, there are pure *vacua* between them. Wherefore, as he assures us, they act on one another by motion towards, and a resultant contact with, each other. Thus it would seem that the solidity, fluidness,

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gaseousness, of bodies are due to motion in the ether, not to their own nature. But again: The existence of the said ether is simply an inference from known physical facts. It is commended by no immediate proof of experience, no testimony of the senses. These are a few only of the difficulties which seem to beset the chemico-*atomic* theory; which, however, it may be in the power of those who are experts in physical investigation to resolve. In the meantime, it would make things easier for those who are seeking information, if the advocates of the theory in question could come to an agreement among themselves touching certain important points in its exposition, about which they at present differ.

If, however, we limit ourselves to the *elements*, (which are generally confessed to have been first in order of actual genesis), and to the accompanying forces and qualities, either common to all or proper to each; the present theory would seem to satisfy all the requirements of physical science.

But it has not solved, it does not essay to solve, the metaphysical problem. For, if these primitive atoms differ in weight, mass, and form; there must be some real discriminating element within them, which is adequate cause of such differences. They all agree in being parts of Matter. They attest their common nature by their mutual affinities. What makes them specifically distinct from each other? Whence is it that an atom of *hydrogen*, for instance, is distinct from an atom of *carbon*? Further: There is corporal Matter, and there is ether which is likewise a material substance of some sort. What is the real principle of difference between the two? Again: Each part (call it an atom, if you will) is, when separate, a substance by itself. It either remains a substance after association with other atoms in the same body or it does not. If it does remain a substance, it follows that all bodies, as such, are the mere accidents of atoms; for millions of substances cannot by mere contact, association, or interaction, make another substance, themselves remaining substance; since in such case every substance of the collection would be two substances,—one on its own account, another by virtue of its conjunction. The Siamese twins physically cohered. They were two substances, notwithstanding; they never made one. If, therefore, the atoms in a piece of carbon or sulphur were all substances, the so-called entity would not be substantially one; but would be a heap, or aggregation, of carbons and sulphurs, just as a heap of stones is not a stone. If, on the other hand, the part does not

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remain a substance; what is the principle by which it becomes a potential part of one substantial whole? So again: The crystalline forms of solids are most numerous. There are above two hundred to be found in carbonate of lime alone. Quartz has hexagonal prisms terminated with hexagonal pyramids. The crystals of alum are octahedral; those of Iceland-spar, rhombohedral; those of sulphur, partly long prismatic needles, partly oblique octahedra; those of common salt and of sugar, cubical. How are we to account for these varieties of form in simple as in compound bodies? An answer has been attempted to this question, by attributing these various forms to the supposed diversity of form in the atoms? But this only throws the question further back; for it occurs at once to ask, Whence arises the diversity of form in the constituent atoms? Moreover, the answer seems very difficult of application to the case of compound substances. For, if the atoms of the different elements that constitute the compound substance remain, each in its state of isolation; whence comes it that the composite has a new crystalline form of its own? How is it, too, that the atoms, in complex structures more particularly, appear to lose altogether the crystalline form they at first possessed? Again: Oxygen has a marked affinity for all metallic bodies; nitrogen, precisely the reverse. These are some of the facts which find no satisfactory solution in the present theory. This is no indictment against the theory, regarded as exclusively a physical system; because the questions suggested reach beyond the merely physical constitution of bodies as subject of experience. Once more: The atoms which go to form a lump of carbon are either carbon themselves or not. If they are carbon, they are substantially distinct from the atoms which constitute a lump of sulphur. Whence the difference between the two? If they are not carbon; how do they become carbon? Surely, mere association cannot give them a new specific nature with all its accompanying qualities. Lastly: There is the great fact of life, vegetable as well as animal, which the theory in question does not touch. How is it that, in one way or another, ancestral generation is necessary for all forms of life? You could, one may presume, produce a counterpart to the protoplasm of a dog by chemical combinations; since by chemical analysis you have discovered its constituents with their relative proportions. Could you educate and transform your protoplasm thus prepared into an animal, and give to it locomotion

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and other acts of life? Could you, by any process known in the laboratory, even produce a hydra or one of the infusoria?

One remark remains to be added. Though it can scarcely be doubted, that the elements were originally created in volume; nevertheless, it is not impossible that these elements may have been created with parts actually separate, each from other, by virtue of their concomitant quantities. It rests with physical science to determine this by *certain* induction. Sundry great difficulties seem to bar the way against such a hypothesis; some of which have been here suggested. But, as the question is rather a physical than a metaphysical one, we may dismiss it with this observation; that its truth, if irrefragably attested, would leave the teaching of the School, touching the *essential* constituents of material substance, precisely where it was before.

B. THE SECOND CLASS of objections comprises *those which have been directly urged against the Scholastic doctrine generally touching Primordial Matter.*

I. No theory concerning the ultimate constituents of bodies can be admitted, which is opposed to the teaching of physical science; for no theory is now admitted by physicists, which does not spontaneously flow from experimental induction of the severest kind, repeatedly renewed, and conducted with precautions which assure to it the highest physical certainty. But the Scholastic theory touching the ultimate constituents of bodies is opposed to the teaching of physical science. Therefore, etc. Further: This physical teaching, which the author of the present objection identifies with the chemico-atomic theory, gives such a harmonious, clear, solid, explanation of the phenomena of nature, and exhibits such illustrious marks of the Divine Wisdom, as not only to persuade the mind but to fill it with admiration.

NOTE. The objections which are here quoted, including the present one, naturally enough, embrace the doctrine of the School not only touching Primordial Matter but likewise touching the substantial form, as being the two essential and primary constituents, according to the Peripatetic philosophy, of material substance. As the nature of the formal cause has yet to be explained and its existence demonstrated, all concerning it that is absolutely required in order to meet these objections, will be assumed as a Lemma from the succeeding Chapter.

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ANSWER. The *Major* must be distinguished. *No theory concerning the ultimate constituents of bodies, which is opposed to the teaching of physical science*, that is to say, to certainly ascertained physical facts and physical laws legitimately evolved from such facts, *can be admitted*,—granted; *no theory concerning the ultimate constituents of bodies can be admitted, which is opposed to the teaching of physical science*, that is to say, to some received theory or other,—denied. The *Minor* must be similarly contradistinguished. *The Scholastic teaching on this subject is opposed to the teaching of physical science*, i.e. to certainly ascertained physical facts and physical laws legitimately evolved from such facts,—denied; *is opposed to the teaching of physical science*, i.e. to some received theory or other,—let it pass. The following is the explanation of the above distinction. It is granted, then, that no theory, metaphysical or other, concerning the ultimate constituents of bodies can be admitted, which incontrovertibly contradicts physical facts and physical laws certainly established, because truth cannot be divided against itself; just as *à fortiori* no physical theory can be admitted, which is incompatible with metaphysical truth. But that a theory concerning the ultimate constituents of bodies cannot be admitted which is opposed to some received physical theory, is justly denied; and this for several reasons. First of all, the proposition implies, that there is only one theory generally received among physicists. If it does not mean this, the assertion would be intolerable; for it would come to this, that no one can reasonably hold any other theory touching this matter than the chemico-atomic, (that is, the one which happens to commend itself to its author), although there be other received physical theories among physicists. But there are *de facto* other theories accepted by those who have addicted themselves to physical science; as, for example, the dynamic. Then, again, the assertion virtually inverts the scientific order; for it as much as says that metaphysical teaching must depend on physical theory, whereas the exact reverse is true. If a physical theory is inconsistent with received metaphysical teaching, it cannot be admitted; because metaphysics is the supreme natural science, not physics. There is another reason which flows from the last mentioned. If there is opposition between any received physical theory and metaphysical teaching, that opposition must have arisen from the fact that the said theory has been transgressing the due limits of physics and turning metaphysician on its own account. The

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proper province of physical science is not the essences of things but their physical constitution, forces, action, and the like, as they manifest themselves to sensile experience. Whenever, then, the received theory is exclusively physical and is based on the certainty of legitimate inductions, the result of careful experiment and observation, there will be no danger of its clashing with the Metaphysics of the School; for truth, though manifold, is one. A third and final reason is, that the proposition in question evidently supposes metaphysics and physics to be working on the same level and at the same *formal* subject-matter; whereas the fact is otherwise. Touching the *Minor*; so far is it from being true that the teaching of the School is opposed to physical facts and the approved inductions of physical science, that, on the contrary, it appeals to them from first to last as its *material* subject-matter; and to these facts and laws, not within a limited area, but throughout the entire realm of corporeal being. No one can doubt this, who has even cursorily looked into the works of Aristotle and St. Thomas. Further, as touching the second member of the distinction:—Though the teaching of the School may be opposed to *a* received physical theory, (and this explains why the proposition has been answered with a *let it pass*); yet, as a fact, there is no physical theory which so admirably coheres with the Peripatetic teaching as the chemico-atomic which the objicient is engaged in defending against all comers; that is, under its already explained modification as the chemico-*elemental* theory. Indeed, as will be seen later on, it has been forestalled by the Angelic Doctor. The confirmation of the *Major* does not in any way interfere with the present answer. Yet it may be well to observe, in passing, that, if every received physical theory concerning the ultimate constituents of bodies '*spontaneously flows from experimental induction of the severest kind, repeatedly renewed, and conducted with precautions which assure to it the highest physical certainty*'; it is a marvel how it should have come to pass, that there are more theories than one approved even now by physicists, and that, even within the limits of the chemico-atomic theory itself, there should be that dissidence respecting fundamental parts of the doctrine, which has been signalized already. The confirmatory argument is rhetorical rather than dialectic, and may be safely left to the good sense and judgment of the reader.

BUT OUR OBJECTOR SUBSUMES:

The Scholastic theory is diametrically opposed to the chemico-

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atomic; so that, this latter theory once admitted, the doctrine of substantial forms *ipso facto* comes to naught. The *subsumption* is denied; and the objicient proves it thus:

It is evident, first of all, on the evidence of the School itself. For all its Doctors have been ever the avowed enemies of the atomic theory under any and every shape. Then, secondly, if the chemico-atomic theory is once accepted, substantial forms become wholly useless.

ANSWER. To the first argument in proof of the *subsumption*, we answer as follows. The School did make war in times past against any and every atomic theory then known, precisely because each one of them failed to offer that which has been supplied by the chemico-atomic theory,—viz. a sufficient principle of substantial union, even from a purely physical point of view. Hence, (as has been already remarked), the accusation of Aristotle, that all those old atomic theories ignored the formal cause. It is true, likewise, that the supposed existence within one body of isolated atoms, or rather molecules, gives rise to many serious difficulties from a metaphysical point of view; but, let the term *atomic* be replaced by *elemental*, the Angelic Doctor takes the theory for granted and explains it. Still it does make war even against the chemico-elemental, as against any other physical theory whatsoever, if it should be offered as a *metaphysical* solution of the question touching the ultimate constituents of material substance. Against the second argument we would, first of all, suggest that if, in presence of the chemico-atomic theory, the Scholastic doctrine should prove *useless*; this would not evince that it is *opposed* to that theory. But, secondly, we reply with a distinction. It may, or may not, be useless to physics; yet it is not only useful, but necessary, to the metaphysician.

The objicient urges his argument and attempts to prove that, in the contemplated case, the Scholastic doctrine of substantial forms would be useless:

Where there are many substances which, by their own forces, adhere together and remain in conjunction, in such a composite, as Peripatetics are free to confess, no physical form is necessary; and there is only a sort of metaphysical form which is to be found simply in the composition and order of parts, such as we see in all artificial productions, for instance, in a house. But, in the atomic system, atoms are united together, and remain united, by their natural powers. Therefore, no physical form is necessary.

ANSWER. For answer,—the first member of the *Major* must be

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distinguished: *Where there are many substances which, by their own forces, adhere together and remain in conjunction,—in such a composite no* substantial *physical form is required* or possible,—granted; *no* accidental *physical form*,—denied. The second member is categorically denied. Not only could there be no metaphysical form in the alleged hypothesis; but, even if there could be such a form, it would be as unlike the accidental arrangement of stones, bricks, beams, etc., in a building, as the external appearance of a bundle of sticks differs from the constitutive form of a living tree. Who does not know that the metaphysical form is the form of the *essence*? How is it possible, then, that any one could acknowledge its possible presence in an accidental coalition, or association, of molecules? Let us now to the *Minor: But, in the atomic theory, atoms are united together, and remain united, by their natural powers,* is a proposition that must be distinguished: according to a purely atomic theory,—granted; according to the chemico-atomic theory,—there is need of a subdistinction: The atoms and molecules are united together by their natural powers *so*, that each one of them needs a substantial form by which they are essentially distinguished from atoms or molecules of other bodies,—granted; *so*, that they need no such substantial form,—denied. But really, save for the sake of the doctrine impugned, there is no need of any distinction; since we are compelled to deny the *consequent* and *consequence* alike. There are, in fact, four terms in the syllogism. *Atoms* are substituted in the *Minor* for *a number of substances* in the *Major*. Thus, that is tacitly assumed, which has to be proved; viz. that they are complete substances, when united in one whole by their mutual powers, because they are not in immediate contact, although they act in unity as though they were connected with a sort of elastic spiral,—and this, remember, *naturally* not *artificially*.

But, to resume:—The force of the above distinctions needs evolution; though the process will oblige us to repeat much that has been insisted upon already here and there. If a certain number of complete bodily substances are united together, and remain complete substances after their union; that union must be accidental. It cannot be substantial or essential. Thus, for instance, *if a pane of glass is fixed with putty into a window-frame*, the putty, wood, glass, adhere together by virtue of the natural powers belonging to those substances; but they remain glass, putty, and wood respectively, as they were before. Therefore, there are three somethings which con-

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stitute wood *as* wood, putty *as* putty, glass *as* glass; that is to say, there are three complete substances. Their union is accidental. *The adhesion of a limpet to the rock, a parasite on a tree, butter on a slice of bread*, are all examples of accidental union. But, in these and similar instances, no man of sane mind would judge that these groups of substances respectively were really one substance because they were accidentally associated. Neither would he call them by one name. The limpet would still be a limpet; and the rock, a rock. Consequently, there would be no need of either a physical or metaphysical form. But now, let us take an instance of another kind. There are, we are told, a vast multitude of atoms in a plate of glass, of different weight, mass, form. How does the common sense of mankind consider and name that entity? Is it one plate of glass, or some hundred thousand million billions of substances? Will any chemist venture to affirm that any one of those atoms could naturally continue to exist without the aid of another atom? In what way, then, can it be a complete substance? Let us take another illustration from two elements, or simple bodies, *oxygen* and *iron*. They have a nature very different from each other. Iron is a metal; oxygen is not. The latter is naturally gaseous; iron is not naturally gaseous. Oxygen in its native state is a non-conductor of heat and electricity; iron in its natural state is a conductor of both. Now, we are taught to believe that two atoms of these substances will differ in the same way as do the elements of which they respectively form a constituent part. What is that which constitutes the essential difference between them? To what cause are we to attribute the opposite properties of the two? Furthermore: Combine these two simple bodies in the requisite proportions, viz. two volumes of iron to three of oxygen, and you form a peroxide of iron,—*red hematite*, with a nature and properties distinct from either. What makes the difference between the two elements and their compound? There is here no mere association of ultimates. There is a *transformation*. For, where properties are different, the essence from which they flow must be different. What is it that gives one essence to a molecule (so-called) of iron, another to a molecule of oxygen, and yet another to a molecule of red hematite? You explain the *result* by the natural interaction of forces proper to different atoms; but, in so doing, you are assigning no cause of the actual constitution. There are many forces, if you will, which conspire to produce the effect as *efficient cause*;

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but, the effect once produced, what is it that gives to each entity its specific nature? The School calls it the substantial form, or formal cause. Let it be called by any other name; provided that this *something* is recognized as necessary and sufficient to constitute that nature, and to bestow upon it its own distinct essential qualities. To sum up:—In chemical combinations, there is more than cohesive union. There is the development of a new substance out of two or more previously existing, but now remaining only virtually in such new substance. The combining forces,—the affinities between different atoms,—may account for the production of that new entity physically; but they do not give us the formal reason of its constituted essence. This becomes more conspicuous, when we mount to living generations and corruptions. Again: We desiderate the formal reason of the essential distinction of one atom from another. Therefore, the Scholastic doctrine of substantial forms is not useless, even in presence of the chemico-atomic theory. Further: Though there must be an incalculable number of atoms existing, potentially at least, in every body; yet, the common sense of mankind judges that body to be one substance. Therefore, the metaphysical doctrine of a substantial form may be useful in explaining its acknowledged oneness. Once more: The parts of a material body, existing as actual parts, are not complete substances; because they are not *sui juris* but are physically dependent on others. If separated, they become complete substances. Accidental cohesion or association cannot make them parts; nor can accidental isolation *of itself* make them complete substances. Thus, there are certain lower orders of animals that you can cut in two; and each part becomes an integral living animal. Previous to separation the severed parts were one animal,—one substantial nature. Now they are two animals, each having a complete substantial nature and a distinct existence. Perhaps, the Scholastic introduction of a substantial form may be of service to explain this fact, even though a chemico-atomic theory should prove physically true.

The objector proceeds to a more direct proof of his assertion, that the doctrine of the School touching this subject and the chemico-atomic theory are so mutually opposed, as to render it impossible to hold to the one and not reject the other.

'For, in the Peripatetic doctrine, bodies do not consist of atoms but of two principles, in themselves without extension, from whose conjunction substance' (that is, complete substance), 'is originated;

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whose quantity is continuous and indefinitely divisible. Hence, no molecular attraction,—no attraction between atoms of different natures; but only a kind of appetition, on the part of Primordial Matter, for different substantial forms. In the conjunction of substances atoms are not combined with atoms, nor do the heterogeneous atoms remain unmixed in the composite; but, on the corruption of the preceding forms, one new form actuates their matter. Wherefore, the diversity of bodies does not depend on the diversity of the constituent molecules; but exclusively on the substantial form. But a theory which affirms these things subverts the whole atomic theory. Therefore, etc.'

ANSWER. *For answer*, the Peripatetic or Scholastic doctrine shall be succinctly given, point by point; so far as may be necessary to meet the argument.

i. The Scholastic Philosophy does not deny that bodies may be *physically* made up of molecules and atoms; since, by the fact of their quantification, they are indefinitely divisible. Nor would it be in direct contravention of that teaching to suppose that the atoms are discontinuous physically; though we should require rigorous physical proof of such a hypothesis, which has not as yet been given. Neither would it quarrel with chemists and physicists, if for convenience' sake they assume atoms as their practical ultimates. One can only say that elements would seem to serve better, if determined to a certain unity of volume; and it appears as though chemists had come to a like conclusion. For an atom is only an infinitesimal part of an element, and is practically useless in the laboratory. But the Peripatetic will say that, whether actual or only potential, it is not a true ultimate. For it is ponderable, they tell us; and, if ponderable, must have an appreciable mass; if mass, extension; if extension, part outside part; if part outside of part, capacity for further division. If we are in search of the real ultimate, the question from the very nature of the case becomes metaphysical; and the School resolves it by teaching that bodily substance, whether it be an atom or a mountain, is ultimately constituted of Primordial Matter and a substantial form which never are, never can be naturally dissociated, though this or that form may be supplanted by another in the same portion of Matter, as in the instance of substantial transformations. The objector is scarcely accurate in describing Primordial Matter as having *a kind*

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of appetition for different substantial forms. It is true that of its nature it postulates for its own perfectness information by some form; but, at the same time, it is indifferent to one as to another and equally receptive of all.

ii. The Scholastic Philosophy teaches that quantity is an accident of material substance, so that this latter in its own essence, as composed of Matter and form, would not be subject to extrinsic extension; but it likewise teaches that *physically* this accident is inseparable from material substance, since it is a property of the first and universal form of Primordial Matter, which is body-form. Nevertheless, quantity is repeatedly changing in the same body. Now, *it may be*, that quantity, in informing the Matter, so informs as to render the part that is outside part by virtue of intrinsic extension physically separate from the other and all other parts; though one would be loth to say that it is so, till the hypothesis of dissociated atoms is more convincingly established. In any case, such dissociation would be, metaphysically speaking, accidental; consequently, could claim no place in the essential constitution of bodies.

iii. The question of continuity is reserved, as has been already said.

iv. The Scholastic doctrine is perfectly compatible with molecular and chemical attraction; since all these are rendered possible by the quantification of the Matter, (which is an essential property of bodily substance and coeval with it) on the one hand, and the specific activity of the substantial form on the other.

v. When it is maintained in the philosophy of the School, that, in ultimate analysis the two constituents of all bodies are Primordial Matter and the substantial form; it does not follow from this, that in every instance there is nothing but these two constituents. Most probably such is the case with the elements, or simple bodies; but with no others. Has our adversary never heard of such a thing, in the teaching of the School, as *the necessary dispositions* of matter for the evolution of certain substantial forms? Now, these dispositions are qualities introduced into the Matter by preceding forms; and, as no substantial form recedes till it is expelled by a successor, the qualities of the former become dispositions for the reception of the latter, as modified and multiplied,—especially in living things,—by the efficient cause of generation.

vi. *Physically* speaking, the essential difference between bodies depends upon the Matter as well as the substantial form. This is

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the case even in the instance of simple bodies which, as being primary, could not admit of any previous dispositions of the Matter. For in them the difference of the Matter exclusively arises from the energy of the informing form which produces, by means of its accompanying qualities, a distinct ordering of that portion of Matter which it actuates. In all other bodies it arises, partly from this cause, partly from previous dispositions.

II. The second argument which merits notice is proffered in the shape of a question, to which the Scholastic Philosophy is invited to give an answer. It is the following: Why should two substances which have combined to produce a certain composite, on the dissolution of that composite, return to what they were before? The pith of this interrogatory argument may be thus given. The chemico-atomic theory gives an easy solution to the problem; while the doctrine of the School gives an answer that is obscure and intricate. In order to set off this assumption to greater advantage, the objector supplies the Peripatetic with the reply which he ought to make.

ANSWER. Without caring to impugn the physical truth of the answer which the chemist is supposed to give to the question; the Scholastic, from his metaphysical point of view, would answer the question in this wise. Whenever such resolution into the previous components does take place after the dissolution of the composite substance, (which is not always the case, since *water*, for instance, may be resolved into *steam*), the following is the explanation. When the dispositions of the Matter belonging to the composite have become so changed, by the action of some applied force, as to be no longer fitted to sustain the substantial form of the composite; the previous qualities of the Matter,—the result of those previous forms and which had remained virtually under the form of the composite,—become explicit and uncontrolled, and postulate the evolution of the two original forms from the proximate potentiality of the Matter into which they had previously relapsed.

III. 'The theory of substantial forms,' says the same objector, is not proved, and rests on no solid foundation.' The *Antecedent* is supported by four statements. First, it cannot be proved that Primordial Matter is one only; or that gold can be transmuted into hydrogen, or sulphur into iron. 'But this is their first postulate,' (that is to say, of the Scholastics). Secondly, the School in earlier times believed that the matter of the celestial bodies is

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different from that of sublunary bodies. Thirdly, it cannot be proved that all earthly bodies are corruptible. Finally, it cannot be proved that there are only four elements; and that these elements are earth, air, fire, water.

ANSWER. It ought not to escape observation, that the *Antecedent* deals exclusively with the theory of substantial forms; while the proof comprises three statements about complete substances and one about Primordial Matter. This premised, to the answer:

i. Proof of the unity of Primordial Matter has been already given in this Article. If gold cannot be transmuted into hydrogen nor sulphur into iron, (assuming the *fact* as well as the elemental nature of these four bodies, neither of which is by any means beyond reach of dispute), it is because they are simple bodies, and there could not be any disposition of the Matter to justify, so to say, the transformation. For, if simple bodies, they would be the primary determinations of Primordial Matter. But nature never acts without a reason. Such an impossibility, therefore,—supposing it to exist,—does in no wise militate against the unity of Primordial Matter. For, *prior* to the determination of Primordial Matter to its specific form,—say of *gold*,—it was indifferently receptive of any form. Wherefore, that same portion of Matter could have become *hydrogen, sulphur, iron*, or any other simple body. But the same cannot be said *after* its specific determination. For the supposed primary form brings in its train certain qualities which are incompatible with any other primary form; while, on the other hand, in the case of the elements there is no efficient cause in nature capable of introducing the form through the medium of the necessary dispositions. It is not, then, a first postulate of the Scholastic doctrine, that gold should be transmutable into hydrogen; or anything of a like nature. ii. The belief alluded to may have been a mistake; though this is by no means beyond the reach of all doubt as the objector seems to imagine. In a Paper read by Mr. Lockyer before the Royal Society, March 20, 1879, on '*Young's List of Chromospheric Lines*,' that eminent physicist thus concludes: 'If, therefore, the argument for the existence of our terrestial elements in extra-terrestial bodies, including the sun, is to depend upon the perfect matching of the wave-lengths and intensities of the metallic and Fraunhofer lines, then we are driven to the conclusion that THE ELEMENTS WITH WHICH WE ARE ACQUAINTED HERE DO NOT EXIST IN THE SUN.' But,

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even if the Scholastics were wrong, what has this to do with their theory of Matter and form? So far is it from being true, that the belief touching the incorruptibility of the celestial bodies is necessary to the said theory, that, on the contrary, it proved a difficulty in the way, and suggested the hypothesis that there are two species of Primordial Matter. Modern spectroscopic discoveries, therefore, if they may be relied on, rather strengthen than otherwise the Peripatetic doctrine. iii. That all earthly bodies are corruptible, is an undoubted conclusion of experience. iv. The belief of the Peripatetics and Scholastics in the four elements of earth, air, fire, and water, no more affects the theory in question, than the apparently well-founded suspicion of Mr. Lockyer that the sixty-five or sixty-six elements of modern chemistry are not simples for the most part but compounds, affects the truth of the chemico-atomic theory.

IV. A fourth argument, (if such it may be called), is embodied in an attempt to lighten the weight of authority which the Scholastic teaching on this subject can produce in its favour. No such appeal to authority has ordinarily been made in these pages,—that is to say, whenever there is evidence sufficient to admit of demonstrative proof;—because in philosophy we must rest contented with nothing short of demonstrative proof and intrinsic evidence, whenever it can be attained. Nevertheless, in abtruse and difficult questions like the present, the authority of the wise and the persistence of a doctrine in the special homes of thought may prove a safe guide to lead us in the right direction, and even to determine the judgment in cases where there is a defect of intrinsic evidence for us. Now, it is a grave fact that the doctrine exposed in the present Article was maintained by Aristotle, has continued to the present hour, has enlisted on its side such men as St. Augustine, B. Albert the Great, St. Thomas, St. Bonaventure, Duns Scotus, and the other Doctors of the medieval Church together with such men as Suarez, Gonet, Vasquez, and a multitude of Philosophers since the Council of Trent. How, then, is this supposed appeal to authority met by our disputant? He urges, first of all, that there have been Schools of philosophy which have taught the atomic theory. There are, moreover, eminent physicists who now hold to the atomic theory. These are safer guides than the Scholastics; because they conclude from induction of experience, while the latter conclude from *à priori* deduction. Secondly, the eminent philosophers who identified

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themselves with the Peripatetic doctrine were ignorant of modern chemistry; so that they were unable to form a just judgment on this particular subject. Thirdly, they took the system as they found it; only intent on one point, to make it harmonize with Christian dogmas. Lastly, St. Thomas undoubtedly would not have maintained the Peripatetic doctrine, had he lived in our times.

ANSWER. i. There have been Schools in the early ages which have taught various atomic theories, all of which have been rejected by our objector; none of which maintained the new chemico-atomic theory that he advocates. There are, it is true, eminent physicists who maintain the last-named theory; just as there are eminent physicists and mathematicians who hold to the theory of forces. But neither the one nor the other theory can help us towards a solution of the metaphysical problem, whatever account we may make of them from a purely physical point of view. Again: It is precisely because physical science, so-called, is based on induction, that it ought not to trespass on metaphysical ground; and it is precisely because the metaphysical science proceeds on *à priori* demonstrations, that its conclusions are immutable and eternal. ii. It is true that the Peripatetic philosophers in past centuries were ignorant of modern chemistry, just as there are chemists of this century who are ignorant of the ancient metaphysics; but let us presume that there are disciples of the School in our day who are not. Does not this fact point to a truth already insisted upon,—to wit, that physical discoveries have a comparatively remote and indirect bearing upon the subject under discussion, because the problem is a metaphysical one? It has to do with essence, not with phenomena. Consequently, the two spheres only just touch. Any physical theory, therefore, which is exclusively physical and does not involve a contradiction in terms, (as the dynamic theory seems to do), is compossible with Scholastic teaching, even though it should otherwise not be able to boast of verisimilitude. iii. It is doing scant justice to the crowd of eminent Philosophers and Doctors of the School, produced or producible in favour of the Peripatetic doctrine, to suppose that they were not equally avid after, and careful of, truth in the natural, as in the supernatural order; since both are a Divine revelation. Moreover, the teaching about Matter and form is not a mere excrescence which can suffer amputation without affecting the body of the Scholastic Philosophy. On the contrary, it is so interwoven with every part that its re-

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jection virtually involves the rejection of,—we might almost venture to say,—the whole. Finally, it must be added, that the prominence given to this particular doctrine, its constant recurrence, the elaborate commentaries on Aristotle's exposition of it, the care bestowed on its proper development, conspire to condemn the rash assumption that the Scholastic Doctors adopted it only because it was the prevailing theory in their time. iv. The assertion about the Angelic Doctor is singularly venturesome, and perilous as a precedent; for it might be copied in controversies more sacred. It is, moreover, absonous to assume that which, from the nature of the case, is incapable of verification, without an assigned or assignable foundation; and the vaticination is made more distasteful by reason of the fact that it is St. Thomas who is the subject of it. His affectionate devotion to the illustrious Stagyrite is manifested in wellnigh every page of his voluminous writings. He invokes Aristotle's authority, under the unique title of *the* Philosopher, on every subject of importance that does not surpass the limits of the natural order; and, in particular, developes the Peripatetic doctrine touching Matter and form, not only indirectly in his theological works, but directly both in his Commentaries on the great Philosopher and in *Opuscula* expressly treating on this subject. He extends the theory, (if theory it can be justly called), beyond the earth to the kingdom of Angels, and even to the throne of God. Rejection, therefore, of this particular chapter in the Peripatetic Philosophy would mean treason to his most intimate and settled convictions.

C. THE THIRD CLASS OF OBJECTIONS comprises those *which impugn the truth of this or that Proposition in particular.*

I. The following objection is brought against *the hundred and forty-first Proposition*, in which it is maintained that Primordial Matter is not a complete substance. It may be thus stated. The Material Cause is not an incomplete substance; but is composed of a substantial potentiality and of a sort of indeterminate or generic form, such as the body-form, or in other words that of corporealness. This seems more in accordance with the experience of the senses. For, in all generations and corruptions there appears a complete substance underlying and supporting the transformation; on the other hand, one never comes across this said subjective potentiality under any of the substantial changes. This testimony

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of the senses is confirmed by reason. For in order that a physical transformation may become possible, it is evidently necessary that the Matter should be extended, and that the portion of Matter which is subject of the transformation should be marked off from other portions of Matter. If it were not thus separated, each particular transformation must needs transform all nature. But to be capable of separation, it must be extended. Extrinsic, and even intrinsic, extension presupposes the actuation in some sort of the Matter; the former, because it supposes quantity which is an accidental concomitant of the substantial form, the latter, because to have part outside part presupposes actuation and is an evident result of the substantial form. Nor would such an indeterminate and generic information hinder the capacity of Matter for more determinate forms; for the generic form is evidently compossible with another specific form. For example, a *dog* is first a *body*, then a *living body;* that is to say, first the body-form actuates the Matter, then the specific form of animality.

ANSWER. It has been already proved to demonstration, that two substantial forms cannot simultaneously actuate one and the same portion of Matter. For such a hypothesis would be equivalent to supposing, that out of two substantial beings in act could simultaneously exist one substantial entity identical with the other two. But it is an axiom among philosophers and patent to common sense, that such a thing is impossible. As to the confirmation borrowed from the testimony of the senses, it should be observed, that Primordial Matter never is, never could be, subject to the perception of the senses. No essence or partial essence is. The senses intue phenomena only; the understanding it is that intues essence. Besides, Primordial Matter, uninformed, is not actual; and, therefore, is not cognizable by even the Divine Intelligence apart from relation to its form. To the second confirmation from reason we reply, that the *Antecedent* with its Prosyllogism is granted; but the *Consequent* is denied. To explain:—In all transformations the Matter remains extended; and must so remain. But, between the corruption of the former substance by the expulsion of its substantial form and the generation of the new substance by the introduction of the new form, there is an unbroken continuity. In fact, it is the introduction of the latter form that causes the expulsion of the former. Extension, then, and separation of the Matter, throughout the time previous to generation, are produced by the quantity and

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form of the original substance. In the moment itself of generation, this extension and separation are preserved by the form then introduced as well as by a new act of the quantity. The third confirmation is denied. As to the argument in proof thereof, it should be observed that the distinction between the generic and specific form *in one and the same individual* is a conceptual, not a real, distinction. Real actuation by a form gives a specific nature to the entity; and in that form is virtually included the generic form which is conceived by abstraction as distinct, after the manner in which universals are formed. No man has ever seen a dog whose body is neither living nor inanimate, but capable of being either. A rose, if it exist, cannot be *only* coloured; but must be determinately of *this* or *that* colour. Imagine, moreover, the absurdities that would follow, if it were once admitted that a generic as well as specific form could really and actually exist together in the same entity. First of all, there would be as many substantial forms in *Henry*, for example, as there are genera in the Porphyrian tree. This, as regards his body: Then, as to his soul, he would have a spiritual form, another animal form, and another vegetable form. As each one of these forms would independently specify his nature, he would possess as many distinct natures as there are forms by which he is determined. The notion perishes in its own absurdity.

II. The second objection is directed against the same Proposition. The Primordial Material Cause, argues the objector, must be a complete substance. For, in order that it may be able physically to concur in the composition of a corporeal nature, it must itself first *be*. But to be, is to be in act; and nothing is in act that is not informed. For everything is actuated by its form. Consequently, there are two acts,—the one of simple being, the other of being of such or such a nature. Hence, 'the generation of a new material substance is not the passage of Primordial Matter from one primal act of simple being to another primal act of being; but it is the passage of informed Matter, (retaining its substantial form), from one act of natural being to another act of natural being. Consequently, it is not a new substance, properly speaking, that is generated; but a new substantial nature.'

Answer. The *Antecedent* is denied. The *Major* of the argument in proof must be distinguished. *In order that an entity may be* in its own absolute or independent existence, *it must be informed*,—

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granted; *in order that an entity may be*, that is to say, may co-exist with another,—a subdistinction is needed: *It must be informed* prior to the co-existence,—denied; simultaneously with the co-existence, —granted. The *Minor* is contradistinguished: *But Primordial Matter, in order that it may be able physically to concur in the composition of a corporeal nature, must first be*, if it should be physically and in order of time presupposed to the act of composition,—granted; if it is physically supposed only in the act of composition,—a subdistinction is necessary: It must *first* exist,—denied; it must exist, —a further subdistinction is required: It must exist as a complete substance in itself,—denied; it must exist with a partial existence dependent on its form,—granted. Now for the Corollary drawn from the above syllogism: *Consequently, there are two acts;—the first, the one of simply being, the second, that of being such or such,* —denied, for this reason. It is impossible that a form should actuate Matter without at the same time determining its specific nature. Therefore, in order to be, it must be *such*. This is equally true, whether *being* is meant to stand for essence or for existence. Finally, touching the canon established on the basis of the preceding propositions:—It is at once admitted, as an undoubted truth, that *the generation of a new material substance is not the passage of Primordial Matter from one primal act of being to another primal act of being,* at least immediately and physically, whatever it may be mediately and in ultimate analysis. It is further granted that this generation of a new substance is *the passage of informed Matter from one act of natural* (or substantial) *being to another act of natural* (or substantial) *being*; but it cannot be granted, for reasons often repeated, that the old substantial form remains after the transmutation. To resume: *Consequently, it is not a new substance, properly speaking, but a new substantial nature*, is a proposition which cannot possibly be admitted. For an entity cannot be actuated or exist as substance, without being constituted, by one and the same act, a substance of this or that particular nature. God does not create, neither does nature give birth to, genera.

A few observations may be added to this formal answer, by way of elucidating the distinctions. It is true that an entity must exist before it can act, at least in order of nature; and that, in order to exist, it must be actuated by its form. Moreover, a complete material substance naturally first exists, even in order of time, before entering into accidental composition with another;

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because such natural composition connotes succession. But an incomplete material substance,—which is in itself a pure receptivity and can only co-exist, since its existence essentially depends on another,—need not first be, in order to enter into composition with the other incomplete substance that completes it. The reason is this: If an entity is a substance, it is of its essence somehow or other that it should be capable of subsisting in itself without the aid of another entity in which it naturally inheres. It is in this way that substance is distinguished from accident. Now, if a substantial entity is,—*as* it is,—immediately capable of its own nature thus to subsist without any diminution of its proper perfection; it is a *complete* substance. If, on the other hand, it is only conjointly with another that it can subsist without any diminution of its proper perfection, and that other is not a Subject of inhesion but a partner in a composite subsistence, the entity in question is said to be an *incomplete* substance. Now, since Primordial Matter is essentially an incomplete substance, if it could be in act properly so called prior to its information by the substantial form, it would be a complete substance; because it would not only be capable of subsistence, but it would actually subsist in and by itself. But then, what about the succession of time connoted in material composition? We answer, that the law does not apply here; because this primordial composition was not an operation of nature, but a Divine Creation. In the beginning God created the elements or simple bodies,—be they few or many in number,—out of which the complex fabric of nature was gradually evolved. It may be, after all, that the first day's creation of light in the Mosaic Cosmogony has a deeper signification than was assigned to it previous to the modern discoveries in chemistry. To resume:—It is sufficient, in the instance of these incomplete substances, that they should coexist in time,—that the passive or receptive element should be prior in the metaphysical order to the active and completorial element,—and that both in order of nature should be prior to the composite. In natural generation the simple elements are pre-existent. Therefore, the change is from one complete substance to another; the extension and portioned separateness of the Matter continuing, as has been explained. As for the distinction virtually included in the Canon, it must be rejected as inadmissible. For no *substance* can exist even in thought without a definite, specific *nature*. The two are, in it, *really* one and the same thing represented under

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two distinct formal concepts. An entity is cognized as a substance inasmuch as it has *perseity*, (as the School terms it),—that is to say, a capacity for existing in itself and by itself without any Subject of inhesion. That same entity is conceived as a nature, inasmuch as itself is the principle of operation by which it tends towards the attainment of its appointed end. Hence, in the abstract, nature is a concept of wider periphery than substance; for accidents have their own proper nature as well as substance. But no substance can be actual, which is not of a specifically determined nature; or a specifically determined substantial nature which is not a substance.

III. The Scholastic doctrine is based on the supposition that Primordial Matter and the substantial form physically compose substance, (that is to say, material substance). 'But this supposition is altogether false; for it is of the essence of physical composition that one at least of the components should be capable of remaining in nature on the withdrawal of the other. . . . In order, therefore, that the composition out of Primordial Matter and the substantial form may be declared to be physical, it is necessary to affirm that either Primordial Matter or its substantial form should be capable of remaining in nature on the withdrawal of the other. But this is impossible, as has been already proved.'

ANSWER. The *Antecedent* is granted; and the *Consequent* denied. To the proof of the *Antecedent*, the reply is as follows. The *Major* might be granted; but it would perhaps save trouble if it were distinguished thus: *It is of the essence of physical composition that one at least of the components should be capable of surviving on the withdrawal of the other*, preternaturally,—let it pass; naturally capable of surviving exclusively,—there is need of a subdistinction: That is to say, in accidental physical composition whether of substance with accident or of accident with accident,—let it pass; in substantial composition,—there must be added a further subdistinction: In the composition, or mixture, of two complete substances,—granted; in the physical composition of two incomplete substances of which one is the act of the other,—denied. The *Minor* is granted; and the *Conclusion*, according to the distinction given under the *Major* denied.

These distinctions will be made clearer by a few expository notes. In accidental composition, a complete substantial Subject is either

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immediately or mediately presupposed. The Subject, therefore, being a complete substance, can naturally continue in existence on the secession of its accident. If one accident is the immediate Subject of another accident, the former may continue to inform its substantial Subject on the withdrawal of the latter. Thus, in *a heated bar of iron* the quantity remains, after the form of heat has receded. If two complete substances have been mixed or otherwise combined together, it is plain that either of them can naturally exist when separated from the other. On the other hand, if there are two incomplete substances, each naturally necessary to the existence of the other and both in union constituting one complete substance,—as is the case with Primordial Matter and the substantial form; it is plainly of their nature that they cannot according to ordinary laws exist, either of them apart from the other. But can they do so supernaturally? In other words, is it absolutely possible? It is a celebrated question in the Schools, whether, by virtue of the Divine Omnipotence, Primordial Matter could exist apart from any form; and whether a purely material form could exist apart from the Matter. In the present Work it will be maintained that neither is possible *de potentia absoluta*. But, spite of this impossibility, there may be real physical composition; just as quantity cannot exist without limit or limit without quantity, (and by limit we understand figure or shape), yet there is clearly physical composition. Neither can it be urged that, though some limit is inseparable, yet this particular figure is separable, from quantity; because in like manner some form or other is inseparable from matter, yet this particular form is separable.

IV. The fourth and following objections are directed against the first Member of the *hundred and forty-fifth* Proposition, wherein it is asserted that Primordial Matter is not in such sense a pure potentiality as to exclude some sort of entitative act. The objection is as follows. There is no entitative act without being; for being is the actuality of everything. But Primordial Matter has no being save through its form. Therefore, it can have no sort of entitative act in itself.

ANSWER. The *Major* must be distinguished. *There is no entitative act without being*, either absolute and complete or incomplete and dependent,—granted; absolute and complete only,—denied. The

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Minor is contradistinguished. The form gives absolute and complete entity or being to Matter,—granted; incomplete and dependent,—there is room for a subdistinction: It gives being by reducing the potentiality to act,—granted; it gives being, in the sense that it communicates to Matter the special imperfect entity of the latter,—denied. The distinction will be sufficiently apparent to those who have mastered the Propositions contained in the first Section of this Chapter. Though Primordial Matter is dependent on the form for its actuation; nevertheless, once actuated, it has an entity, nay,—a partial existence,—of its own, which is essentially distinct from that of the form and is communicated by itself to the complete composite.

V. Out of two actual entities cannot be composed an entity substantially one. But, if Primordial Matter could claim for itself some sort of entitative act, it and the substantial form would be two actual entities. Therefore, etc.

ANSWER. The *Major* is distinguished. *Out of two actual*, complete, and independent, *entities cannot be composed an entity substantially one*,—granted, or rather let it pass; *out of two actual*, incomplete, and mutually dependent *entities*,—denied. The *Minor* is contradistinguished; and the *Consequent*, subject to the above distinction, denied. In reply to the Proposition that *out of two actual, complete, and independent entities cannot be composed an entity substantially one*, answer has been given by preference,—*let it pass*. For by chemical combination, out of two or more actual, complete, and independent substances, (previously, that is, to the transformation), —such as *hydrogen* and *oxygen*,—can be composed an entity substantially one, viz. *water*.

VI. Primordial Matter, being a simple being, must be either entirely potentiality or entirely act; for it cannot be composed of the two. But if this Member of the *hundred and forty-fifth* Proposition were true, Primordial Matter would be a composite of potentiality and act. Therefore, etc.

ANSWER. The *Major* must be distinguished. *Primordial Matter, being a simple entity, must be either entirely potentiality or entirely act*, or entirely potentiality and entirely act, under different respects, —granted; it must be disjunctively either entirely potentiality or entirely act,—denied. The *Minor* is contradistinguished. *If*

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Primordial Matter does not exclude from itself some sort of entitative act, it would be a composite of potentiality and act, that is to say, it would be entirely potentiality in one respect and entirely some sort of entitative act under a different respect,—granted; it would be partly potentiality, partly act, so as to exhibit anything like real composition,—denied. This distinction stands in need, perhaps, of a little explanation. Between *objective* potentiality and act in general there is essentially immediate opposition; so that it is a contradiction in terms to say, that the same thing is at once in objective potentiality and either in act or an act. But there is no such necessary opposition between *subjective* potentiality and act. On the contrary, a *subjective* potentiality is something real in itself and therefore must include some sort of act; though it is opposed to its *completorial* act which is act *simply*, as distinguished from act *somehow*. (See the second Prolegomenon to *the hundred and forty-fifth* Proposition.) It is, therefore, at once a potentiality and an incomplete entitative act, not by composition but by a transcendental identity between the two, though always with an essential relation to, and dependence on, its act or substantial form. This metaphysical truth is more easily and more clearly recognized in the instance of an *active* subjective potentiality, such as *the faculty of thought*. For who would venture to deny that the intellectual faculty in the human soul is something real and, therefore, in some way or other an entitative act? Yet, it is not *simply* act, till it has been actuated by the informing thought.

VII. Since act and pure potentiality are opposites, their natures must be proportionate. Therefore, as pure act has nothing of potentiality included in it; so, pure potentiality has nothing of act included in it. But Primordial Matter is a pure potentiality. Therefore, it has nothing in the shape of act included in it.

ANSWER. The *Antecedent* of the mother-syllogism shall be granted out of respect; for it is a philosophic axiom. Forsaking, therefore, for once logical rule, we will throw our distinction into the *Consequent. Therefore, as pure act has nothing of* passive *potentiality,* or receptivity, *in it; in like manner, pure passive potentiality has nothing of* actuating *act in it,*—granted; *therefore, as pure act has nothing of potentiality* of any kind *included in it; so, pure passive potentiality has no act* of whatever kind *included in it.*—there is need of a subdistinction: pure *objective* potentiality,—

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granted; pure *subjective* potentiality,—denied. The *Minor* of the second syllogism is granted; and the *Conclusion*, under the given distinction, denied. To explain:—Pure act, (we here speak of *finite* act, because between the Infinite and finite there is no proportion properly so called), does not exclude active potentiality; nor, indeed, all entitative potentiality, seeing that it is capable of elevation into a supernatural order. *A fortiori*, it does not exclude a metaphysical potentiality; which is essentially included in the contingency of its being. That which it does exclude is, a passive potentiality, or receptivity, within its own natural limits. In like manner, pure subjective and passive potentiality does not exclude every kind of entitative act; for how could it be something independent of human concept, if it did? But that which it does exclude is, any actuating, or informing, act. The proportion, therefore, is preserved. Further: Attention must again be called to the fact, that subjective potentiality is not the proper and adequate opposite of pure act, but objective potentiality. Nevertheless, it must always be borne in mind that, antecedently to its actuation in the composite, it is neither partial entity nor act; because it can only exist in union with its form.

VIII. If Primordial Matter were anything actual, it must be either substance or accident. But, evidently, it cannot be accident; because, first of all, it is an essential component of bodily substance, and then, in the second place, it is so far from postulating a Subject, that itself is the primordial and universal Subject. But neither can it be substance. For it is in potentiality, as we are told, to become a substance; and potentiality to become a thing cannot be identical with the thing itself.

ANSWER. Primordial Matter is not accident, but incomplete substance. Wherefore, the *Major* may be granted, as well as the first Member of the disjunctive in the *Minor*. But the second Member of the disjunction,—viz. that *Primordial Matter cannot be substance*,—must be denied. Primordial Matter is a substantive potentiality receptive of the substantial form; and, conjointly with its form, constitutes complete material substance. But to say that an incomplete substance, (such as Primordial Matter is in this hypothesis), has a capacity for becoming substance, is a contradiction in terms; unless it should be meant, that Matter has a capacity for becoming,—or, more properly, constituting,—a *complete*

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substance, which would be true, indeed, but wholly irrelevant to the argument. One might add, that the same argument would equally militate against the actual entity of the material form.

IX. St. Thomas, in answer to a difficulty touching the Divine cognition, makes the following observation: 'Because we lay it down as a fact, that Matter was created by God, not however without form; Matter has, indeed, an exemplar Idea in God, but not different from the Idea of the composite. For Matter of itself neither has being nor can be object of cognition[1].' So, Aristotle affirms, that 'Primordial Matter cannot of itself become object of cognition[2].' But, if it were anything actually, it could be cognized directly and of itself.

ANSWER. Neither St. Thomas nor Aristotle pretends that *dire t* cognition of Primordial Matter is impossible; but both agree that it cannot be cognized absolutely and of itself. The reason of this is, not that Primordial Matter has no entitative act of any sort, for then it could not be cognizable at all; but that it has a transcendental relation to form. Therefore, the passive potentiality is known in its substantial act. Besides, as Primordial Matter and substantial form are correlatives, they are necessarily together in cognition, as they are in being; and the superiority is attributed to the form, because it is simply act, while Primordial Matter is only act in a certain sort—and that, the most imperfect of ways. Finally, in the third Section of the present Chapter it has been shown, from various passages in his Works, that the Angelic Doctor clearly acknowledged some sort of entitative act in Primordial Matter.

ARTICLE II.

The causality of Primordial Matter.

In the preceding Article the several causes of Primordial Matter have been incidentally exhibited, though perhaps they may have escaped notice. For its formal cause is evidently enough the substantial form; God is its sole Efficient Cause; union with the form its proximate, the perfect composite its adequate and ultimate

[1] I^ae^ xv, 3, 3^m^.

[2] *ἡ δ' ὕλη ἄγνωστος καθ' αὑτήν. Metaph. L. VI, (aliter VII), c. 10, v. fi.*

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final cause. A Material Cause, from the very nature of the case, it cannot have.

Next in order, the question awaits us touching *the causality itself* of the Material Cause. At the outset of this investigation, it will not be amiss to warn the reader against a possible misconception which might, if unnoticed, create a hopeless confusion in his mind, spite of all the efforts that have been made to render the question of causality as clear as in itself it is. In our day the idea of causality has become so identified with *efficient* causality to the exclusion of any other causal action, that the concept of this specific kind of causality will involuntarily obtrude itself, whensoever the mind concerns itself with the question of causation; spite of persevering efforts to avoid such confusion. But here, as in the next Chapter, this conceptual restriction would be fatal to a right understanding of the subject-matter. For Primordial Matter is not an *extrinsic* cause; that is to say, its causal influx into the production of the complete composite substance does not proceed from without, but from within. It is an *intrinsic* cause and *intrinsic constituent.* But if so, it might be urged, how can it be a cause at all? For the given definition of a cause is, that it is *a principiant which essentially and positively communicates entity to another being, or which produces an existing essence entitatively other than its own.* Such a definition seems to imply, that the entity, which is denominated cause, is external to the other entity which is conceived as the effect. Yet, on closer examination, this prejudice will disappear. Take Primordial Matter, as it has been already explained. The entity of the integral composite is, plainly enough, really distinct from the Matter of which it is composed. Furthermore: This latter really, and positively, and essentially contributes to the constitution of the former, albeit intrinsically. Thus, for instance, the Matter in *wood* or *coal* is an entity wholly distinct from *fire;* yet it intrinsically contributes to the production of fire. The Matter in the food which an animal eats is assuredly not the same thing as *that animal's flesh antecedently to its consumption*; yet it intrinsically contributes to the renovation and increase of the body. Wherefore, to conclude:—As there is extrinsic, so there is intrinsic causality.

Having premised so much by way of caution, we may now proceed to investigate the *causality* of the Material Cause. In order to be capable of determining the nature of this causality, it is

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necessary to know its effects; for, from the nature of the effects, it is a comparatively easy task to infer the true nature of causal influx. It is further of great importance to know by means of what element in its Being a cause works. For instance, if one man persuade another to strike a certain person and the blow is given, we know at once that the causality of the first mentioned is *moral*; for he has worked purely by his *will*. But, if he takes the man's arm and forces him to deal the blow, it is plain that the causality is *physical*; and the actual striker is a mere instrument in the hands of the principal agent. After having determined these two points, it will not be difficult to arrive at the nature of material causality. Hence, three questions await us; 1. What are the effects attributable to the Material Cause? 2. By what does Matter cause? 3. What is the precise nature of its Causality?

§ 1.

The effects of the Material Cause.

PROPOSITION CXLVI.

Passive generation is caused by the Matter as a passage to the effect, rather than as an effect itself.

Prolegomenon I.

This Thesis does not contemplate the elements, or simple material substances, as is plain; for they were necessarily created. Consequently, in their case there could be no generation. It includes all composite bodies which have been evolved out of the varied combination of the elements, in the manner already roughly outlined, afterwards to be filled in more explicitly.

Prolegomenon II.

Passive generation is distinguished from *active*. The latter is the action of generation as proceeding from the efficient cause; the former is that same action as received in the Subject, or Material Cause.

Prolegomenon III.

A body may be considered either in *the course*, or *process*, of its production or as *actually produced* and constituted in its complete

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nature. In the former case, it is said by the Schoolmen to be *in fieri*; in the latter case, *in facto esse*. The former is a species of motion; the latter, the term of that motion. As this word, *term*, has often been, and will often be again, used in a philosophical sense either the same as, or cognate to, that in which it is now employed; a word or two about its meaning will not be deemed out of place. Its derivation, as so often happens in other instances, supplies us with the radical idea, traceable throughout its various shades of meaning as applied to different objects. A term, then, is a limit or boundary which determines the extension of a thing. As applied to time, it limits its duration; for duration is the extension of time. Thus, for instance, we speak of a *term of years*,—of *Term*, or *Term-time*, at the bar and the Universities. In Logic, the *Subject* and *Predicate* are called terms; because they are the two boundaries of a Judgment; and, for a similar reason, the *Major*, *Minor*, and *Middle* concepts in a Syllogism are called its terms. In geometry, a *point* is called the term of a line,—a *line*, of a superficies,—a *superficies*, of a solid. Again: The *two entities related* are said to be the terms of the relation, for the father is father of the son, and the son is son of the father; wherefore, the relation of *fatherhood* is terminated in the *son*, just as the relation of *sonship* is terminated in the *father*. So, yet again, a *term of thought* is the object which determines its extension. Finally, in dynamics, a term of motion is that which limits it either way; that is to say, in its beginning or in its end,—in its point of departure and its point of rest. The former is denominated by the School the *terminus a quo*; the latter, the *terminus ad quem*. Now, seeing that generation is, as has been said, a species of motion; it is this last meaning of the word that is intended in the present Thesis. It is evident, therefore, that we are here considering passive generation *in fieri*.

I. The first Member of the Proposition, wherein it is asserted that *passive generation is caused by Matter*,—in other words, that *Primordial Matter is the Material Cause of generation*,—is thus proved.

That which intrinsically contributes to passive generation an entity really distinct from passive generation itself and, moreover, contributes that entity as a Subject simply receptive of generation, is the Material Cause of generation. But these characteristics are verified in the instance of Primordial Matter. Therefore, etc. The *Major* is evident; for it is nothing more or less than the definition of the Material Cause. The *Minor* will require detailed declaration;

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for *subjective* evidence of its truth, (that is to say, the reception of its objective evidence in the mind), depends almost entirely on an accurate realization of that which is essentially included in the concept of *generation*. Generation, then, *in fieri* is a certain definite motion in material entities; to wit, *an intrinsic change*. Now, material entities are subject to two intrinsic changes; in one of which all that is universally recognized as substantial remains, but certain accidental modifications, such as *size*, *colour*, *shape*, and the like, are changed,—that is to say, these are not the same as they were before. In the other, everything is seen to change,—substance, nature, properties, as well as Accident; as in the instance of *sugar*, when submitted to *the chemical action of sulphuric acid*. The former species of change goes by the name of *alteration*; the latter is known as *generation*. Such is the teaching of Aristotle. 'Since, then,' writes the Philosopher, 'the Subject is one thing, and the attribute' (passion, *πάθος*)—'the nature of which is, to be predicated of the Subject,—is another, and since each admits of change; there is *alteration*, when the Subject which is perceptible to sense remains as it was, and a change takes place in its accidents either in the way of opposites or of mediates between opposites. For instance, the body remaining in itself that which it was before, is now healthy, now diseased; and brass is at one time round, at another angular, but is itself one and the same. When, on the other hand, there is an entire change and nothing in the Subject, perceptible to sense, remains the same, . . . such a change is generation[1].' Thus understood, it will easily be seen that generation has a twofold meaning,—the one generic, the other specific. Here the Angelic Doctor shall be our interpreter. 'You must know,' he writes, 'that we use the word, *generation*, in two senses. In one way we apply it indiscriminately to all things subject to generation and corruption; and, so understood, it is neither more nor less than change from not-being to being. In another way, generation is restricted to living things exclusively; and, thus understood, it means the origin of some living thing from a living principiant in conjunction.

[1] *Ἐπειδὴ οὖν ἐστί τι τὸ ὑποκείμενον καὶ ἕτερον τὸ πάθος ὃ κατὰ τοῦ ὑποκειμένου λέγεσθαι πέφυκεν, καὶ ἔστι μεταβολὴ ἑκατέρου τούτων, ἀλλοίωσις μέν ἐστιν, ὅταν ὑπομένοντος τοῦ ὑποκειμένου, αἰσθητοῦ ὄντος, μεταβάλλῃ ἐν τοῖς αὐτοῦ πάθεσιν, ἢ ἐναντίοις οὖσιν ἢ μεταξύ· οἷον τὸ σῶμα ὑγιαίνει καὶ πάλιν κάμνει ὑπομένον γε ταὐτό; καὶ ὁ χαλκὸς στρογγύλος, ὁτὲ δὲ γωνιοειδὴς ὁ αὐτός γε ὤν· ὅταν δ' ὅλον μεταβάλλῃ, μὴ ὑπομένοντος αἰσθητοῦ τινὸς ὡς ὑποκειμένου τοῦ αὐτοῦ, . . . γένεσις ἤδη τὸ τοιοῦτον. De Generat. et Corrupt. L. 1, c. 4, init.*

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The special name of this generation' (*in facto esse*) 'is nativity. Not everything, however, thus specified is said to be generated; but that in particular which is produced after the manner of *likeness*. Hence, the fur or hair of an animal does not lay claim to the character of an offspring or son; but that only which is produced in the way of likeness: and not of every kind of likeness. For worms which are produced from animals do not lay claim to the character of generation and sonship; albeit there is a *generic* likeness. But, in order to claim the character of this sort of generation, it is requisite that an entity should be produced in the likeness of the same *specific* nature; just as man comes from man and horse from horse. In living things, then, that proceed from potentiality to the act of life, as in men and animals, generation includes both senses of the word, generation[1].' In the instance of inanimate bodies, indeed, it is perhaps more usual to designate these changes from not-being to being as *transformations*; though the word, *generation*, is frequently applied to them in chemistry. Before passing on, it may prove of service to offer a short explanation of the teaching of St. Thomas just cited. When he tells us that generation is a change from not-being to being, he does not mean that there is no Subject common to both terms; for then it would not be a change at all, but a creation. The words refer exclusively to the new substance which first was not and now, after the change, is.

There are three things to be considered in connection with the subject of generation:—first of all, the prerequisites of generation; secondly, generation itself; lastly, the subsequent of generation. The first is, as it were, the term from which the change or motion begins. The third is the term at which the change or motion

[1] 'Sciendum est quod nomine generationis dupliciter utimur. Uno modo, communiter ad omnia generabilia et corruptibilia, et sic generatio nihil aliud est quam mutatio de non esse ad esse. Alio modo, proprie in viventibus, et sic generatio significat originem alicujus viventis a principio vivente conjuncto; et haec proprie dicitur nativitas. Non tamen omne hujusmodi dicitur genitum, sed proprie quod procedit secundum rationem similitudinis. Unde pilus, vel capillus, non habet rationem geniti et filii, sed solum quod procedit secundum rationem similitudinis, non cujuscunque; nam vermes, qui generantur ex animalibus, non habent rationem generationis et filiationis, licet sit similitudo secundum genus. Sed requiritur ad rationem talis generationis quod procedat secundum rationem similitudinis in natura ejusdem speciei, sicut homo procedit ab homine, et equus ab equo. In viventibus igitur, quae de potentia in actum vitae procedunt, sicut sunt homines et animalia, generatio utramque generationem includit.' 1ae xxvii, 2, o.

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ends. i. To say nothing of the efficient cause, which it will be more convenient to introduce a little later on,—there are three things principally required prior, at least in order of nature, to the generative change. These are, a Subject, a privation, a disposition. A Subject there must be, as already stated, wherein the change is effected, and which is receptive of the generating act. This in ultimate analysis is Primordial Matter. Now, Primordial Matter is of itself, as we know, indifferently receptive of any and every form. But the *proximate* Matter, (if one may be allowed the expression), of all generation is, antecedently to the generative change, informed by a substantial form with its concomitant properties. It is necessary, then, to generation, that it should be antecedently uninformed by that particular form which is about to be introduced into it. As it is, however, capable of receiving it, and has become disposed towards it in a way to be explained presently; the want of this form is called a privation. In this sense it may be, to some extent, that privation is reckoned among the metaphysical constituents of bodily substance. If, however, generation is taken for the substance generated, it is plain that privation of the antecedent form would more appropriately take its place among the aforesaid metaphysical constituents. But, thirdly, in order that the subjacent Matter may have its attraction towards the particular form that awaits it, it must be proportioned to it. For this purpose it is subjected to certain alterations, or accidental changes, by which it becomes disposed for the reception of that form. Hence St. Thomas says, 'In order that any generation may be pronounced natural, it must be effected naturally by the agent, and from natural Matter proportioned for the purpose[1].' And again: 'In generation and corruption there is no motion or contrariety, save by reason of a preceding alteration; and thus it is according to alteration alone that there is properly passion, by which one of two contrary forms is received and the other expelled[2].' Such alteration is nothing more or less than those natural dispositions of the Matter, by which it is made ready for the reception of the new form. In

[1] 'Ad hoc enim quod generatio aliqua naturalis dicatur, oportet quod fiat ab agente naturaliter, et ex materia naturali ad hoc proportionata.' 3 *d.* iii, *Q.* 2, *a.* 2, *c.*

[2] 'In generatione autem et corruptione non est motus nec contrarietas, nisi ratione alterationis praecedentis. Et sic secundum solam alterationem est proprie passio, secundum quam una forma contraria recipitur, et alia expellitur.' *Verit. Q.* xxvi, *a.* 1, *c.*, *v. init.*

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another place the Angelic Doctor gives us some little insight into the nature of the genesis of these dispositions in the Matter. 'Because the natural agent in generation,' he writes, 'acts by transmuting the Matter into the form, which is effected in that the Matter is first of all disposed agreeably with the form, and then at length attains the form, accordingly as generation is the term of alteration; on the part of the agent, that which acts *immediately* must necessarily be an accidental form, answering to the disposition of the Matter. But this accidental form must act by virtue of the substantial form, as the instrument of the latter; otherwise, it could not by its action introduce the substantial form[1].' Thus, then, it would appear that the substantial form of the generating agent or efficient cause acts upon the subject Matter, not immediately, but through the instrumentality of an accidental form or quality proper to itself; which accidental form disposes the Matter by the introduction into it of a form like itself, and thus causes the eduction of the substantial form by virtue of the efficacy inherent in that substantial form of which itself is the instrument. Hence it comes to pass that the alterations, or accidental dispositions, naturally precede and make way for the substantial transformation. As a fact, these preparations of the Matter are often going on or developing for a long time after the generating act of the efficient cause has germinally, so to say,—or virtually rather,—introduced the ultimate and completorial form into the Matter; so that the Matter is provisionally provided with another transitory substantial form, ancillary to, and anticipatory of, the form primarily intended by nature. Thus, for instance, the *hen* after impregnation lays its *egg*. In the Matter, now subjected to the temporary ovicular form the final transformation, by which the chicken-form is evolved and the egg-form expelled, does not take place for three weeks. In the case of a *goose* it requires some six weeks before the goslings are hatched. The eggs of the *Aphides*, or *plant-lice*, are laid in the autumn; the transformation does not take place till the warmer days of spring.

[1] 'Quia enim agens naturale in generatione agit transmutando materiam ad formam, quod quidem fit secundum quod materia primo disponitur ad formam, et tandem consequitur formam, secundum quod generatio est terminus alterationis; necesse est quod ex parte agentis id quod immediate agit, sit forma accidentalis correspondens dispositioni materiae; sed oportet ut forma accidentalis agat in virtute formae substantialis, quasi instrumentum ejus: alias non induceret agendo formam substantialem.' *Anima*, *a.* xii, *c.*, *v. m.*

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ii. So much for the prerequisites of generation. Turn we now to the consideration of generation itself. As already stated more than once, generation *in fieri* is essentially a motion; for it is a change. Now, though motion postulates a point of departure and a point of rest; yet itself includes neither the one nor the other. Consequently, generation *in fieri* neither includes the complete substance which is the Subject of the change, with its privation of the subsequent form, nor the form educed, nor the generated composite. It begins from the one and ends with the other. But it essentially requires two things,—a field of operation, and an agent to set it going. We will take the field of operation first. If there is motion of any kind, there must be a thing moved; that is to say, something in which the movement is propagated. But an intrinsic natural change can be found only in entities subject to a change of nature; and a substantial change, only in entities subject to a change of substantial nature. Such are bodies; because they are composite. You cannot subject to either generation or corruption the human soul or pure forms. Now, of the two substantial components of bodies, the form, (as is plain), cannot become the subject of generative motion; for it is the immediate object of the motion, either by way of expulsion or by way of introduction. The two forms, therefore, are the two terms of generative motion. It must be Matter, then, in which the movement takes place, which conspires with the movement and without which the movement would be impossible. Hence, St. Thomas observes that 'Matter, as Aristotle says, is immediately the subject of generation and corruption[1].' Further: Matter passively conspires with the generative movement towards the production of the composite, by virtue of the dispositions produced in it by that motion. This is explicitly stated by the Angelic Doctor. 'Matter,' he writes, 'assists in generation, not by any action, but inasmuch as it is adapted for receiving such action. And this aptitude is called the desire or appetite of Matter and the inchoation of the form[2].'

But motion does not only require a field of operation, it postulates also an agent, or efficient cause, to set it going. If experience is

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[1] 'Sicut in 1 de Gen. dicitur, materia est immediate subjectum generationis et corruptionis.' 2 *d.* xii, *Q.* 1, *a.* 1, 5[m].

[2] 'Materia coadjuvat ad generationem non agendo, sed in quantum est habilis ad recipiendum talem actionem; quae etiam habilitas appetitus materiae dicitur et inchoatio formae.' 2 *d.* xviii, *Q.* 1, *a.* 2, *c.*, *v. f.*

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to be our guide, certainly there is no physical motion, perceptible to the senses, which is self-commenced. Indeed, such a concept almost seems to involve a contradiction in terms. For a body at rest is in a state of indifference as well as of actual inertia, which indispose it to motion;—the latter, because it opposes a force to be overcome; the former, because the body, as a consequence of its indifference, cannot initiate a motion determined in direction and velocity. Generation, therefore, requires a generator; as Aristotle demonstrates in his Work on *Generation and Corruption*[1]. But the generating entity acts by some element of its nature, which is accordingly the formal efficient cause of generation. That element is its substantial form; for the qualities, through which this latter operates, assume the character of an instrumental cause. In connection with this part of the inquiry, St. Thomas quotes a conclusion of the Philosopher, which will serve to throw additional light on the subject. 'Aristotle,' he says, 'proves by two arguments, that forms . . . are reduced to act from the potentiality of Matter, by the action of a form existing in Matter[2].' In other words, since the eduction of the form is the approximate effect of generation and, by virtue of it, the production of the complete composite; the form of the generating entity, as constitutive of its essential nature or principle of tendency, must formally produce the motion of generation in the subject. But it is the action of the form as *existing in Matter*, and operating as a consequence on Matter through material accidents. In the case of living things to which the concept and word *generation* principally apply, there is something to be added. *Like begets like.* The efficient cause, by the tendency of its nature, intends (so to speak) to introduce into the Subject a substantial form specifically identical with, though individually distinct from, its own. A generic identity will not do. A dog does not generate a sparrow; nor does an acorn produce an elm. St. Thomas has admonished us of this in a passage quoted some pages back. And now, his definition, given in that quotation, will be the better understood. He there defines generation to be '*the origin of a living entity from a living principiant in conjunction*'; and adds that the said living entity must bear a specific likeness to

[1] *L. II. c.* 9.

[2] 'Probat enim Aristoteles duplici ratione, quod formae . . . reducuntur in actum de potentia materiae per actionem formae in materia existentis.' *Po*ª *Q.* vi, *a.* 3, *c., v. m.*

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its principiant. By the word *origin* he indicates its genus; in finite being, the origin is the imparted motion that originates the new substantial composite. The additional words, *of a living entity*, limits it to its specific meaning. The *living principiant*, in the instance of finite beings, is the efficient cause. But the most important part for our consideration just now, is the concluding phrase. In generation there must be a physical conjunction of some sort between the generator and the generated; which physical conjunction is effected in the Matter. That the offspring must be born in identity of species with its parent, has been already exposed. There remains one more thing to subjoin. The action of the efficient cause and the passive receiving of the Matter,—or rather, that which is passively received in the Matter,—are one and the same act under different respects. For the action of the efficient cause is received in the Matter; and the motive action in the Matter is imparted by the efficient cause. As the former, the action regards the active potentiality of the agent; as the latter, the same action is considered in relation to the passive potentiality of the Material Cause. Just as a blow of the fist is given by one and received by another; but entitatively it is the same act in both. Here is perceived the physical conjunction necessary to generation.

iii. In the last place, we are to consider the term of generation; which is proximately and formally the eduction of the substantial form out of the potentiality of Matter, principally and, as it were, *intentionally*,—because such is its final cause,—the production of the composite. The former will engage our attention in the next Chapter. Touching the latter, there is only this to be observed. As soon as the new form has informed the Matter, it either modifies or at the least gives a new entitative act to quantity, and assumes the qualities proportioned to its own specific nature. We have a striking illustration of this in the transformations of a caterpillar into a butterfly, or in that of an egg into a chicken.

Now we are in a condition to declare the *Minor*. Matter contributes an entity to passive generation, that is really distinct from the generating motion; forasmuch as the Subject of motion and the motion itself are really distinct. Indeed, they are physically separable. For the Matter existed, before the motion began; and it persists in being, after the motion is ended. It is true, indeed, that the generation of bodily substances must be in some portion of Matter; for this is common to all physical motion. But there is

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no necessity why it should be particularly in this portion of Matter more than any other. That it is also intrinsic in the generating motion, is also plain; for the whole is Matter *in* motion, or motion *in* Matter, indifferently. Finally, there can be no doubt that the Matter is purely receptive of generation; for, as Subject, it is a merely passive potentiality.

II. The Second Member, viz. that *passive generation is caused by Matter as a passage to the effect, rather than an effect itself*, is thus declared. The end of generation is the production of the complete composite. Generation is a motion; and motion essentially regards its term of rest. A thing moves, whether in the spiritual or material order, in order to find its appointed end or place of quiet. Therefore, generation is not a true effect; because it is a mere passage to the composite. The appetition of matter is not for motion in and for itself; but as the necessary means to an end, to wit, its own specific at once and individual determination in the production of a complete corporal substance. Wherefore, Matter contributes its entity to generation and unites itself causally to the motion, in order to find its ordered rest in its own completion. But, where one thing is wholly on account of another; *there*, in intention, there is only one.

PROPOSITION CXLVII.

The substantial form, if educed from the potentiality of Matter, is an effect of the Material Cause.

Prolegomenon.

The parenthesis, *if educed from the potentiality of Matter*, has been inserted in the Enunciation, in order to exclude all question touching the human soul, which, though essentially the substantial form of the human body and, for that reason, an incomplete substance, is immediately created by God. With this solitary exception, all forms of living material substances are evolved from the potentiality of Matter.

The Proposition is thus declared:—(i) The form is educed from the potentiality of the Matter; in other words, the entity of Matter is necessary to the existence of the form. Therefore, Matter conduces in its way to the eduction of the form. If so, it causes the form. (ii) It sustains the form in being. The form

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so far depends upon it, that it cannot,—at least, naturally,—exist without it. Therefore, as its necessary subject, Matter is the Material Cause of the form. (iii) These arguments receive confirmation from a fact to which the Angelic Doctor calls attention. For he remarks that 'The causality of the generator . . . extends itself to the form which is reduced from potentiality to act[1].' For the causality of the generator is exclusively received in the Matter. Therefore, if it extends to the form educed, it does so in and through the Matter.

PROPOSITION CXLVIII.

The information of Matter by the substantial form is an effect of the Material Cause.

This Proposition has been expressly added, although its truth is too self-evident to need any proof or even declaration; because it includes the human soul within its periphery. For, though the soul is not educed out of the potentiality of Matter like other living forms of corporal substance; nevertheless, its actual information of the body depends upon the Matter. And let not this statement be unjustly denounced as a mere subtlety. For, by virtue of such information, it is enabled to exercise those lower faculties of sense, feeling, passion, which otherwise would remain according to the order of nature in pure potentiality. A man cannot naturally see without eyes, nor hear without ears, nor feel without a body. But this information essentially depends on the Matter, as co-partner of the information. Therefore, the Matter causes the information after its own manner as material cause, that is to say, *passively*. Besides all this, there is a certain sense in which the human soul may be truly said to depend metaphysically on the body. For it was intentionally created to inform the body; so that its *raison d'être* is naturally due to that body. Once more: It is an incomplete substance, till it is completed by union with the body that it was created to inform. So then, the information of the Subject by the form is something really distinct from the form,—a real substantial mode of that form; and

[1] 'Causalitas generantis vel alterantis non sic se extendit ad omne illud quod in re invenitur, sed ad formam quae de potentia in actum educitur.' 2 *d.* 1, *Q.* 1, *a.* 2, *c.*, *v.* m.

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Matter intrinsically contributes, as a receptive potentiality, to that information. Consequently, the information is one of its effects. If this is verified in the instance of the human soul, which is a spiritual substance; *à fortiori* does it hold good in the case of all the other living forms, which are wholly dependent on Matter.

PROPOSITION CXLIX.

The composite is an effect of the Material Cause.

This Proposition needs no declaration; since Primordial Matter has its place among the causes, primarily because of its passive influx into the substantial composite, as one of the intrinsic constituents of the essence of this latter.

PROPOSITION CL.

The integral composite is the adequate and, in order of intention, primary effect; the information of Matter by the substantial form, the proximate and, as it were, formal effect, of the Material Cause. Passive generation and the educing of the form are prerequisites, though in a different order, of the proximate as well as of the primary and adequate effect.

I. The First Member of this Proposition, in which it is asserted, that *the integral composite is the adequate and, in order of intention, primary effect of the Material Cause,* is thus proved. (i) It is the *adequate* effect. That is the adequate effect of any cause, and consequently of the Material Cause in particular, which includes all the other partial effects in its own nature. But the integral composite is thus inclusive. For the passive generation and the educing of the form from the potentiality of the Matter are the composite in its course of being produced,—in other words, on the road to its production, (*in fieri*),—while the union of the form with the Matter formally constitutes it in its complete entity outside its causes, (*in facto esse*). In fact, this latter and the composite are scarcely more than different concepts of one and the same effect of material causality; unless, indeed, the union should be considered as a motion of which the composite is the term. (ii) The integral

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composite is the *primary* effect in order of intention. By *order of intention* is here understood that which nature may be said to mean or aim at in its generating changes. This, in ultimate analysis, resolves itself into the intention of the Creator Who has imposed such order in the things of nature. This second Proposition is self-evident. Who of sane mind could ever be persuaded that Matter was principally created for the sake of the mere generating motion, or for the educing of forms in themselves impervious to sense, or even for the mere uniting of form and Matter apart from its result? Who would fail to discern that it was primarily created as a cause for the production of those multiform bodies, whose existence, in the established order is either a necessity, or advantage, or delight to man? But, if proof were needed, the statement might be proved from Aristotle's definition of the Material Cause, viz. that it is *that out of which a thing is made.* For the only thing, properly speaking, which is made out of Matter, is the composite substance. Further: It is only in regard of the composite that the Material Cause exercises its proper causality; forasmuch as it truly becomes a constituent part of it.

II. The Second Member, which affirms that *the information of Matter by the substantial form is the proximate and, as it were, formal effect of the Material Cause,* is thus declared. That it is the proximate effect, is at once seen; for it is only by the information of the Matter that the composite is produced. That it is, as it were, the formal effect of the Material Cause, needs demonstration. Wherefore, that is the formal effect of the Material Cause, which answers exactly to the tendency of its nature. But its information, or actuation by the form, answers exactly to the tendency of its nature; for Matter, as being a pure subjective potentiality, has essentially an inclination for its actuation and consequent completeness. Indeed, without such actuation it is unable to exist. As, then, it desires existence; it desires to that end union with its form.

III. The Third Member wherein it is declared that *generation and the educing of the form are prerequisites of the proximate as well as of the adequate effect,* is thus declared. In order that the composite may be constituted by the information of the Matter, it is necessary that there should be a form capable of informing. If that form has not been created for the purpose, it must be educed out of the potentiality of Matter. But, again, according to the established

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order, an efficient cause must introduce into the Matter the generating motion by which the form is evolved. Therefore, generation and the educing of the form are previously required, in order that the form may be united to the Matter and the composite produced.

IV. The Fourth Member, which affirms that *generation and the educing of the form are prerequisite in another or different order, the one from the other*, plainly follows from the preceding expositions. For the educing of the form requires previous generation; but generation does not necessarily postulate, as a result, the educing of the form. This is clear in the instance of human generation. Moreover, the educing of the form is the effect of generation. Lastly, generative motion precedes in order of time the union of Matter with form; as also, of course, the production of the composite. But the educing of the form from the potentiality of Matter does not precede in order of time either the one or the other; though it does precede both in order of nature. The reason of this is, that generation is action in Matter; the form is the act of Matter.

Corollary I.

Though at first sight there might seem to be only a conceptual distinction between the eduction of the form, the union of the latter with Matter, and the production of the composite, viewed in the concrete as effects of the causality of Matter; yet, considered in themselves, there is a marked distinction. For the form educed is distinguished from the composite, as a part from its whole. The union of the form is distinguished from the form itself, as a substantial mode from the Subject of modification. Again: The form, as in the instance of the human soul after death, may sometimes actually exist without this mode; which is the sure sign of a real distinction. Lastly; the eduction of the form is really distinguished from both union and form; since the former is not essential to all complete material substances, whereas the two latter are.

Corollary II.

Though generation in its term, as caused by Matter, is identified in the concrete with the composite substance, yet it is in itself really distinct from this latter; not only because the process of being made is really distinct from that which is made,—the being pro-

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duced from the thing produced,—but more especially, because the composite remains after generation has ceased.

Corollary III.

Corruption, or the expulsion of the antecedent form, has justly not been reckoned among the effects of the Material Cause; though Matter is the Subject in which the expulsion takes place. The reason is, that such expulsion, or desinence, of the old form is not directly intended either by generation or in the production of the composite substance; though it follows, as a necessary consequence, from the introduction of the new form. For two substantial forms, as we shall see in the next Chapter, cannot at one and the same time inform the same portion of Matter. Besides, corruption is a privation; and, as such, a nonentity. But a natural operation cannot have for its term, and a real cause cannot have for its effect, a no-thing. It is, therefore, rather to be accounted a result (as it were, accidental),—or a concomitant,—of the causality of Matter.

Corollary IV.

Generation and corruption are predicated neither of the Matter nor of the form, but of the composite. Primordial Matter, as we have already seen, is ungenerative and incorruptible. Touching the form, the Angelic Doctor supplies us with a special reason for its exemption from both. 'It must not be said,' he writes, 'that the form is made or corrupted; because to be made' (i. e. generated) 'or to be corrupted, is the part of that whose it is *to be*. But *to be* does not belong to the form as though existing, but as that by which something exists[1];' that is to say, the Form is not in itself an existent entity, but that by which the composite substance is what it is and exists as such. Wherefore, it is material substance that is corrupted by the expulsion of its form from the Matter; and it is material substance that is generated by the introduction of a new form into the same Matter. As, then, in order of nature, the expulsion of the old form is a necessary condition of the introduction of the new; the generation of one body is always preceded by the corruption of another.

[1] 'Nec est dicendum, quod forma fiat vel corrumpatur; quia ejus est fieri et corrumpi, cujus est esse; quod non est formae ut existentis, sed sicut ejus quo aliquid est.' *Spiritu.* *a.* 3, 12m.

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§ 2.

By what does Matter cause?

This second question is of some moment; yet, from the nature of the case, it is more than ordinarily abstruse. It has been apparently suggested by parallel discussions touching the efficient cause, where it is more easy to seize the bearings. For the sake of clearness, therefore, let us preface the present investigation by turning aside for one moment to consider the efficient cause. Generally speaking, there are three distinct things necessary in their several ways to efficient causality. There is, first of all, the efficient cause,—the *primary* principiant of the effect. Then, there is the particular faculty by which the efficient cause causes,—the *proximate* principiant of the effect. Lastly, there are certain necessary conditions, in whose absence actual causal influx is rendered impossible. An example or two will set this doctrine before the eyes. A man, we will say, has chosen the military profession for his future career. That choice is a real effect; and the supposed individual is the principal cause of it. Proximately, however, it is the man's will that is the cause; because it is by that faculty he chooses, not by intellect, or imagination, or the senses. But now, let us suppose that the person is a clergyman or a chronic invalid; he would be *ipso facto* prevented from making such a choice, however he might wish it. It is a necessary condition, then, of all deliberate choice, that the thing to be chosen should be within reach,—practically possible. The above example has been taken from the moral order. Let us select one other from art. It is the *sculptor* who primarily produces the *statue*; but he does so by the *sculptorial habit*, which supposes a knowledge of the principles as well as a manual dexterity,—or, as the Greeks called them respectively, γνῶσις ποιητική and ἐμπειρία, the two constituents of τέχνη. The sculptorial habit, accordingly, will be the proximate efficient cause, or that by which the principal efficient cause causes. Now, let us suppose that the artist is suffering from paralysis, or that the block of marble is still at the docks, or that there is an irremediable flaw in the stone; the statue cannot be effected. Therefore, in this case, there are at least three necessary conditions, in defect of which the artist cannot proceed with his subject,—namely, sufficient physical energy, proximity to the Material Cause, due disposition of the Matter. To transfer these elements of efficient causality to our investigation of the

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Material Cause;—it occurs to inquire, Is there here likewise a principal and proximate principiant? in other words, *by what* does Matter cause? Again: Are there certain necessary conditions required in order that Matter may be capable of causal influx? If so, what are they? These are the questions which now await our attention.

PROPOSITION CLI.

Principally alike and proximately Primordial Matter intrinsically causes its effect by virtue of its own entity.

THIS PROPOSITION IS PROVED,

I. DIRECTLY, from the nature of Primordial Matter, which admits of no distinction between a principal and proximate cause. The reason is as follows. Wherever such distinction is really discoverable, it arises from a composition, at the very least metaphysical, between the entity of the cause and that of the causal faculty, or potentiality belonging to that cause. But, in the instance of Primordial Matter, its potentiality is its entire essence; for it is essentially nothing else but a receptivity, or passive potentiality. Consequently, there is no ground for any such distinction; for the entity which is the principal principiant is neither more nor less than its own subjective potentiality which is, if anything, the proximate principiant. In other and plainer words, since Primordial Matter is nothing but a passive capacity for receiving the form, its whole essence in act is causal. It exists in causing.

II. INDIRECTLY, from the impossibility of its being otherwise. If the potentiality by which Primordial Matter causes is not its own essence, it is either an accident really distinct from the entity of Matter or it is some mode really distinguishable from the same; for there is no other conceivable foundation for the distinction between the principal and proximate principiant in the present instance. But it cannot be either the one or the other. Therefore, the entity of Matter must be its proximate as well as primary principiant. The two Members of the *Minor* are thus separately proved. i. *The supposed proximate principiant cannot be an accident really distinct from the entity of Matter.* For a potentiality is always proportioned to its act. Consequently, a substantial act postulates a substantial, not an accidental potentiality. Further: The union between Matter and form in bodies is a substantial union. But, if

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it could be effected by the intervention of an accident, it would not be a substantial, but merely accidental union. Lastly: If there were such an accident in Primordial Matter prior to its information by the substantial form, it must inhere in the Matter *as* an accidental form; for this, *accident* of its nature requires. Now, such inhesive union of the accident with Matter is either caused by the intervention of another accident, or it is not. If it is, the question returns touching the union of this second accident, and so on, for ever; which is absurd. If it does not; then, seeing that Matter can be *immediately* united to the accidental form, what reason is there for supposing that it cannot be united *immediately* to the substantial form? And this question tells the more, if we bear in mind that Primordial Matter is essentially ordered to this union with the substantial form. ii. *The proximate principiant in Primordial Matter cannot be a mode really distinguishable from the entity of Matter.* For this passive receptivity of Primordial Matter is its essence; so that it cannot be separated from the Matter even by the Divine Omnipotence. Such separation is inconceivable; nay, it is a simple self-contradiction. Wherefore, it is no mere mode; but the *quasi* difference of Matter; as the Angelic Doctor says, in a passage already quoted[1]: 'Matter, if its nature could be defined, would have for its difference simply its relation to form.'

PROPOSITION CLII.

The existence of the Material Cause is not a necessary condition of its causality.

Prolegomenon.

This and the next Thesis are directed against the teaching of Suarez on this head, who introduces these two conditions:—viz. the existence of the Matter, and its proximity to the form,—in accordance with his general theory touching the absolute possibility of preserving each in existence apart from the other. If it may be permitted to say as much, Suarez is inclined to attribute an independence of entity to the one and the other, which is certainly foreign to the teaching of St. Thomas. The reader will do well to consult the *hundred and ninety-seventh, hundred and ninety-eighth,*

[1] *Article* i, § 3, *of the present Book.*

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the *two hundred and third*, and following Theses under the same Section, where this question recurs and is discussed according to its full bearings.

Declaration of the Thesis.

That cannot with any show of reason be classed among the mere conditions however necessary of any causality, which is essentially included in the nature of the latter. But the existence of the cause is essentially included in the nature of material, as of every other kind of, causality. Therefore, etc. The *Major* is evident. The *Minor* is thus proved. A thing must *be* in order to receive. But the material cause is a receptivity purely and simply such. Therefore, the existence of the material cause is essentially included in the nature of its causality. Again: The existence of Matter, owing to the exceptional nature of its entity, cannot in strictness of language be required either as a necessary condition or essential element of its causality. The reason is, that Matter has no independent existence. It would, therefore, be more correct to say, that the partial existence or co-existence of Matter was an essential element in the nature of its causality. It is an essential element; because the information of Matter by the form essentially includes the existence of the former, so that its existence and causality are *de potentia absoluta* inseparable.

PROPOSITION CLIII.

For similar reasons, indistance from the substantial form is not merely a necessary condition of the actual influx of the Material Cause; since it is essential to such influx.

Declaration of the Proposition.

A mere condition, however necessary, is, metaphysically at least, separable from that which it conditions; since it is not essentially connected with the latter. But indistance from its form is an essential property of material causality and, consequently, of the Material Cause. The reason is, that Matter is a pure potentiality and the substantial form is its own act. But it is metaphysically impossible that a potentiality of any kind should be distant from its own act. Take the instance of an active potentiality. Who would not smile to be told that it was a necessary condition of the intellectual faculty in eliciting a thought, that the faculty should

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be indistant from the thought; or that, if the sensitive faculty of touch is actually to feel the winter's cold, it must be indistant from its feeling? Yet active potentialities, (such as these are), have more of entity than a purely passive potentiality which cannot exist unless actuated by some form. Moreover, since the form essentially depends both *in fieri* and *in facto esse* on the Matter, and the existence of the Matter from first to last is essentially dependent on the form; it is a contradiction in terms to affirm the possibility of the distance of the Matter from its form.

Let it not be supposed that the discussion contained in this and the preceding Thesis is a mere dispute about words. If such had been the case, it would have found no room for itself here. On the contrary, it is connected most intimately with a grave point of difference between the teaching of Suarez and of the Scotist School on the one hand, and of St. Thomas on the other. It is difficult to explain with clearness the Scholastic doctrine touching the nature of Primordial Matter and its substantial forms, which together constitute all material substance; and that which appears at first sight to involve a difference of little or no moment, may become very far reaching and important in its issues.

It only remains to add, that there are peculiarities in the union of the human soul with its body, which modify somewhat the relation of these two causes; but the consideration of this point is reserved for the following Chapter.

PROPOSITION CLIV.

Though it is more probable that quantity is naturally inseparable from Matter, and although the quantification of Matter is a necessary condition of generation in order that the agent may be enabled to communicate the generating motion; nevertheless, quantity is not absolutely and formally necessary to the causality of Matter.

The present Proposition necessarily anticipates in some measure that which, later on, will form a distinct subject of discussion. For this reason, the first and second Members will not be established by proof; but, assumed as *Lemmata*, will be considered only in their relation to the main purport of the Thesis. Under these circumstances it will be easier for the reader, if we confine ourselves to

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a general declaration and explanation of the Enunciation; more especially as the proof of the third Member, which is the only one that directly concerns us now, will of necessity be included in the exposition. Wherefore,

I. The intent of the present Proposition is to show, that quantitative information is not a necessary condition of the causality of Primordial Matter. But a difficulty confronts us *in limine*. Quantity is so connatural with Matter, that it is physically inseparable from it. Now, though Matter is also inseparable from its form, because its actuation by the form is necessary to its existence; nevertheless, there is a great difference between the two cases. For the form is necessary to Matter as completive of its substantiality,—that is to say, in its own substantial nature. The conjoint causality of the form is essential to the constitution of the composite. But quantity seems to be congenital with Matter for its own sake; and whether its inhesion precedes in priority of order or accompanies the information of Matter, (about which the Doctors of the School differ), it belongs to Matter, and only affects the form, (wherein it does affect the form), by concomitance. This might perhaps lead one to conclude; that quantitative information is a necessary condition of the causality of Matter. But such a conclusion would be erroneous. For quantity is in Matter and is naturally inseparable from it, because, as Suarez remarks, 'Matter is an entity of such a nature as to postulate this property; so that quantity is a property consequent on the Material Cause, rather than a necessary antecedent condition of its causality.' Consequently, if by a miracle,—to borrow from the same author,—Matter should be preserved without quantity, it would still be able, for its part, to fulfil its office in regard of its form and the composite.

II. But there remains a yet greater difficulty. For, in the instance of all generated bodies, (and the term, *generated*, is here employed in its most extended signification), not only is the Matter *de facto* quantified; but its quantification is necessary to the eduction of the new form and the generation of the composite. True; but this necessity does not arise from any causal indigence on the part of the Material Cause. It is due rather to the indigence of the agent, or efficient cause, which requires extension in the subject of its action, in order that it may be able to communicate the generative motion. Further: The agent requires such extension; because, by reason of its own quantitative information, all its

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material forces are subject to the same property. Since, therefore, its own action is accommodated to that property, it connaturally exacts a like accommodation on the part of its Subject and transcendental correlative,—that is to say, in the Matter as receiving motion from it. In a word, *the motor* is quantified; therefore, *the moved* must be quantified also.

III. Quantity, then, is not absolutely and formally necessary to the causality of Primordial Matter; that is to say, it is not necessary in such sense that Primordial Matter essentially requires to be informed by quantity, in order that, in any case whatsoever, it may be proximately capable of receiving or sustaining any form.

THIS THIRD MEMBER of the Proposition is proved, first of all, from the nature of Primordial Matter. For the whole entity of the Material Cause, (to repeat what has been so often said before), consists in its receptivity. If, therefore, it were not proximately and immediately receptive, it would proximately and immediately be nothing. If it is proximately and immediately receptive, it is proximately and immediately causative. Against this argument it might possibly be urged, that a potentiality may be proximately and immediately reducible to act; and yet be subject to a necessary previous condition. In reply: It must be admitted, that the above objection holds good in all those cases wherein the condition is *extrinsic* to the entity of the potentiality; but not when the condition is an *intrinsic* addition to it. For, if it needs such entitative addition, it cannot be *of itself* proximately potential. Secondly, it is proved from the nature of quantity. For quantity is an accident. It therefore, in order of nature, presupposes a complete substantial Subject. Accordingly, information by quantity, or quantitative information, is in order of nature consequent upon the integral constitution of the composite; just as, in the same order Matter and its causality are prior to the constitution of the composite. How, then, could quantitative information be a necessary condition of that causality? Lastly, it seems incongruous, that an accidental addition should be a necessary condition of an exclusively substantial causality.

NOTE.

It is of importance that the reader's attention should be again directed to the adverbs, '*formally* and *absolutely* necessary,' as given in the third Member of this Thesis. For, in the evolution of generated substances, it would seem as though not only quantity

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but certain qualitative dispositions also were necessary conditions of the eduction of this or that substantial form in particular;—the former in the way already explained, the latter as conspiring causes towards the production of this or that composite. Neither is formally and absolutely necessary to the causality of Primordial Matter.

§ 3.

What is causality of Matter?

The word *causality* may be understood in two different ways; first, as representative of potential, secondly, as representative of actual influx of a cause. About the former, in the instance of Primordial Matter, there can be no question; for the potential causality of Primordial Matter is, plainly enough, its own entity. But a controversy existed in the Schools touching its actual causality. Some maintained that it is nothing but the entity itself of the Material Cause. Others pronounced it to be a predicamental relation; others, again, the effect of the Material Cause; others, finally, that it is a real mode really distinct from Matter. The first and third opinions may be forthwith eliminated from the discussion; because in all causes the actual causality is something mediate between the entity of the cause and the effect. In like manner, the second opinion must be rejected. For causality is the foundation of relation which, consequently, presupposes the former. How, then, can the one be identified with the other? There only remains the fourth. But, first of all, it is not universally admissible; and secondly, in the particular causality to which it truly applies it needs explanation.

It will conduce towards a solution of this problem to recall to mind a remark already made; viz. that the composite, or adequate effect of material causality may be considered in two ways. For we may regard the composite either in course of production or in its completed and enduring constitution. Consequently, the actual causality of the Material Cause may be considered in reference to the producing of the complete substance (*in fieri*), as well as in reference to its perfected production (*in facto esse*). The answer to the proposed question will depend on the point of view from which the causality of Primordial Matter is regarded. Wherefore,

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PROPOSITION CLV.

The actual causality of the Material Cause, considered in relation to the generating change, is simply and exclusively passive generation. It is immediately such in respect of the generating motion itself; mediately such, relatively to the educing of the form, the uniting of form and Matter, as well as the producing of the composite.

I. The First Member of this Proposition, in which it is declared that *the actual causality of the Material Cause, considered in relation to the generating change, is simply and exclusively passive generation*, is thus proved. Of the four opinions enumerated all have been eliminated, not without reason, save one; and that one is untenable in the instance of the generating change. But no other hypothesis besides these four has been proposed, or can be conceived, save that which is offered in the present Proposition. Therefore, this last is established by process of exhaustion. The proof of that part of the *Major*, in which it is asserted, that *material causality, in relation to generative motion, cannot be a real mode really distinct from the entity of Matter*, will appear more appropriately under the second Member. If any one should wish to assail the *Minor*, let him bring forward a new hypothesis that will bear the light. This first Member is further proved from the nature of Primordial Matter. In order that a generative motion may be practically or physically possible, nothing else is requisite save a Subject proximately and immediately disposed to receive the motion. But Primordial Matter, in and by itself, is proximately and immediately disposed to receive the motion. Therefore, etc. The *Minor* is declared. Because Matter is a subjective potentiality, it includes two things; viz. an imperfect entity and, because imperfect in itself, a receptivity of act or form. But these two elements are sufficient, in and by themselves, to receive the generating motion. Therefore, etc. The *Minor* is declared. An entity of some sort is required for all motion: You *have* it. But the motion is generative; that is to say, it embraces a substantial form as its proximate term. In Matter there is a receptivity which is naturally expectant of a substantial form as the essential condition of its existence. In a word, there is no need of any medium; since it is of the essence of Matter to be passively receptive of a generative

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motion, terminating in a substantial form which it naturally desires as the condition of its own existence.

II. The Second Member, in which it is affirmed that *the actual causality of Matter, relatively to the generative action, is immediately passive generation*, is thus proved. The actual causality of Matter, relatively to active generation, cannot be the entity itself of Matter or any predicamental relation for reasons already alleged. It cannot be the effect, properly so called; not only because, as has been urged before, causality is something mediate between the cause and the effect, but likewise because generation is not properly speaking an effect, but the road or passage to an effect. Can it, then, be a real mode really distinct from Matter; that is to say, a real modification of Primordial Matter, rendering the latter proximately susceptive of the generating motion and really intervening between the receiving and the imparting of that motion? The answer must be in the negative; and this for the following reasons. First of all, such a mode is superfluous. For, in like manner as the actual causality of the generating agent is immediately its action emanating from itself into the Subject; so, the passive reception of such action in the Material Cause, or the intrinsic passive concurrence of Matter with the generative change, (in other words, passive generation), is itself the causality of Matter, and is equally sufficient without any addition. Again: In the same way as the result of causation is caused, so does the cause cause; for causation essentially includes a parallel relation to its principiant and its term, as to the one causing, the other caused. But passive generation, as a result, is caused by Matter immediately and of itself; since it is essentially, intrinsically, exclusively, dependent upon Matter. Therefore, Matter, as actually causing the generative motion by sustaining it, causes it immediately and of itself. This reasoning is further confirmed, if we attentively examine into the nature of material causality. For what is really meant by saying that Matter causes generation? It means nothing more or less than this; that Matter sustains the generative motion as the Subject in which it is naturally produced,—so necessarily, that not even Infinite Power could preserve it in a state of separation from Matter. Is it not obvious, then, that the Material Cause must sustain it immediately and of itself? For if a real mode, really distinct from Matter, should intervene; it surely would not be impossible to the Divine Omnipotence to preserve the

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generative action apart from the Matter. Lastly, if material causality were some real mode added to the Matter; such mode must be added by *something*,—that is to say, it must have an efficient cause. If so; the efficient cause must be either the efficient cause, or natural agent, of generation, or it must be the educed form, or finally the Primordial Matter. But it cannot be any one of the three. Therefore, etc. The *Minor* is proved, part by part. First of all, it cannot be the natural agent of generation. For the natural agent of generation acts by its substantial or accidental form towards the production of a naturally constituted effect. It, therefore, efficiently concurs only towards the introduction or eduction of the new form; according to the old adage, that *Like begets like.* It might possibly be urged that, though such a mode could not be the formal term, even partially, of the generating agent; yet that it might result, as it were parenthetically, from the formal action of the agent, in some such manner as heat is generated by chemical union or resolution. But against this there recurs the fact, that Matter does not stand in need of this mode; since, as we have seen, it is quite sufficient for its own essential causality. Besides, this resultant of a mode either precedes, in order of nature, the formal action of the generating agent or is simultaneous with it. If the resultant precedes, it must have been directly caused by a distinct action of the agent; which is against the hypothesis. If the resultant be simultaneous, in order of nature, with the generating action of the agent in Matter, it is difficult,—nay, impossible,—to understand how it could be a modal preparation of the Matter for the reception of that action; the more so, that the resultant of an action, in order of nature, presupposes the action. But the action must, from the necessity of the case, be in the Matter; therefore, the causality of Matter, that is to say, passive generation, would already in order of nature have become actual, prior to the constitution of the mode. Secondly, it cannot be the educed form; for, in such hypothesis, the form would cause the causality by which itself is caused. It cannot, in the last place, be the Matter, or Material Cause, itself; because then Matter would be the cause of its own causality, and would be able to produce a mode in order to effect that of which it was incapable itself. Besides, such a solution involves another metaphysical impossibility; seeing that Primordial Matter is exclusively a passive potentiality. Hence it may safely be concluded, that passive generation is *itself by itself* that which

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constitutes the causality of the Material Cause in the generative change; whereas, in the effects properly so called of that cause in the generative change, passive generation is the medium, so to say, of material causality. This brings us to the third Member.

III. THE THIRD MEMBER, wherein it is contended that, *relatively to the educing of the form, the uniting of the latter with Matter, and the producing of the composite, passive generation becomes mediately the actual causality, or causal principle, of the Material Cause*, is thus declared. The generative movement, received in and sustained by the Matter, causes the educing of the form out of the potentiality of the Matter, and consequently causes the uniting of the form with the Matter from whose bosom the former is evolved. But this uniting is the producing of the composite. In truth, these three effects are partial concepts of that which is *physically* one effect; although they are *metaphysically* real and *metaphysically* distinct. Matter, then, by its generative movement received concurs in the production of these three effects; but differently. For in the educing of the form and in the uniting with its form its concurrence is extrinsic; whereas, in the production of the composite its causality is intrinsic.

PROPOSITION CLVI.

The causality of the Material Cause, considered in relation to the completed union of form and Matter as well as to the composite in its perfected constitution, is its sustenance of the form as informing.

It is not necessary to consider the two Members of the present Proposition separately; for it is generally admitted, and in itself is sufficiently plain, that the union of form and Matter *in facto esse* and the production of the composite *in facto esse* are physically one and the same thing; and are metaphysically distinct, only because of the diversity of habitude or relation referred to above, in which Matter respectively stands to the one and the other. The Proposition, therefore, as a whole, is thus declared.

Since Matter is a potentiality and exclusively such; its entire causality must regard its act. Further: Since its potentiality is purely passive; its causality must be purely passive in relation to its act. Therefore, it can only be that of a Subject on which the form or act depends and by which it is sustained. But it is not always necessary that the form should depend on, or be sustained

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by Matter, in regard of its *existence*. This we know from the instance of the human soul. Consequently, it depends on, and is sustained by Matter, in its capacity of an *informing form*. Yet again: Form and Matter have a mutual relation to each other, being causes each to the other; as will be afterwards explained. This causal relation, moreover, is prior in order of nature to the respective relation of the two to the composite. But the causal relation of the Matter to the form is precisely that of sustaining the form *as an informing form*. Lastly; according to its definition, the Material Cause is the primary Subject. Therefore, its causality is its subjection; and its subjection, as is obvious, is to the substantial form. But it is so subjected; inasmuch as it sustains that form in quality of form.

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I. The formal causality of the Material Cause consists in this, that it is the potential component of the composite. For it is one of the properties of the Material Cause, that its causality is intrinsic. But, if it consisted in the sustentation of the form as informing, it would be extrinsic, not intrinsic.

ANSWER. It must be observed, first of all, that the Material Cause is denominated intrinsic, relatively to its adequate effect; but the question now is as to the formal nature of the causality by which that effect is produced. Then again, it is by one and the same subjection that Matter sustains the informing form and helps to constitute the composite. Lastly: Matter, as subject of the informing form, is an intrinsic cause. For, seeing that the informing form, *as* actually informing, informs Matter; Matter intrinsically enters into the *union*.

II. The adequate effect of Material causality is the composite, according to the doctrine delivered in this Chapter. But the causality of Matter in the composite is to be its potential part, or receptive component; not, formally at least, the sustentation of the form. Therefore, etc.

ANSWER. It is readily granted, that the composite substance is the principal and adequate effect of the Material Cause; but the union of Matter with its form is the proximate and, as it were, formal effect, because by virtue of such union the composite is *ipso facto* constituted. But the causality of Matter in such union

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consists in the sustentation of the form. Again: Although it is true that in ultimate analysis Matter is the potential part of the composite; nevertheless, potentiality is not its causality so much as its entity, and is more accurately predicated of it before, than after, the constitution of the composite. Neither does the addition of the words, *part of the composite*, touch the true causality; save in so far as it seems to connote the substantial union. In other words, that Matter is potential, is a fact; but tells nothing directly and explicitly of its causality. That it is part of the composite, is a fact which reveals the *effect* of its causality. But neither each separately nor both together explain the *nature* of the causality. Indeed, the reverse is the case. For, in proportion as Matter exercises its actual causality, it surrenders its actual potentiality; since it is then actuated by the form.

The objection is urged.

That which is not made, is not caused. Now, the formal information, or material sustentation of the form, is not made; but the composite only. If so, the sustentation of the form cannot be caused. Therefore, the actual causality of Matter cannot consist in such sustentation.

ANSWER. The *Major* must be denied; for many things are caused, which are not made, according to the sense in which *made* is distinguishable from *caused*. The latter has a wider periphery than the former. Thus, generation, (as all admit), is caused by Matter; but it is not made by Matter. The expulsion of the antecedent form in the corrupted, is caused by the introduction of the new form in the generated, substance; yet what philosopher would venture to contend that a privation could be made?

III. Matter is cause of that entity of which it is a principiant. But it is not principiant of the form, but of the composite. Therefore, it is in no sense cause of the form, but only of the composite.

ANSWER. The *Major* may be granted. The *Minor* must be distinguished. *Matter is not principiant of the form*, that is to say, of the form as sustained and informing,—denied; of the form itself,—there is need of a subdistinction: Matter is not an intrinsic principiant of its entity,—granted; Matter is not extrinsic Subject of its eduction,—yet another subdistinction: necessarily, or in all cases,—granted; where the form is material,—denied.

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IV. The causality of the Material Cause in the constituted composite is the union of the form with the Matter; for this is the formal constitutive of the composite. Such is the opinion of Suarez.

ANSWER. If this opinion differs in anything but manner of expression from the opinion defended in the last Proposition, there are grave reasons for rejecting it. First of all, the act of union itself belongs rather to the causality of the form than of the Matter. For it is a mode, properly and solely belonging to the form. Further: It connotes a certain activity, at least *in fieri*, which is incompatible with a purely passive potentiality. Against this last argument it might possibly be urged, that the union of Matter and form is actively caused by the informing form, but passively caused by the corresponding and sustaining Matter. Therefore, though in Matter the causality is purely passive; still, for all that, it is true causality. But, thus explained, the two opinions coincide, save in the way of putting them. Nevertheless, even so, there are objections that occur to this doctrine of Suarez. For, first of all, union properly attaches, as has been said, to the form. Secondly, union is an effect; but causality is something mediate between the cause and the effect. Lastly, union does not expressly indicate the causality of Matter; since it is at least equally predicable of the form.

Here will be the most fitting place to determine, how far the theory of an intervening mode, as explanatory of material causality, is admissible; in other words, whether, even if the existence of a mode in the constitution of the composite be conceded, such mode has any formal connection with the causality of Matter. Wherefore, towards a satisfactory solution of this problem, let the following principles be set down by way of premisses. 1°. A mode presupposes in order of nature the actual entity of the Subject that it modifies. It is in this respect,—as inclusive of its necessary dependence on a Subject,—that it assumes the nature, so far, of accidental Being. 2°. A *substantial* mode, (the present inquiry is, of course, limited to the natural order), connotes two things, viz. a substantial entity for Subject and the, in some way or other, substantial incompleteness of such entity. 3°. The only mode supposable, in the case now under our consideration, is the mode of substantial union by which Matter and form are united. These principles once admitted, it becomes plain that Primordial Matter

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can become Subject of no mode, till it has been actuated by its substantial form; for, prior to its actuation, it is purely potential and primarily potential of its act. Consequently, no mode could enter into its causality,—otherwise, into the reception of the substantial form. Wherefore, if the mode of union exercises any causality in the constitution of the complete composite substance; it must be referred to the form, not to the Matter. For the substantial form is an act. Whether the mode of union enters into the causality of the form, is a question to be determined in its place. It suffices here, that the mode of union cannot find a place in the causality of Matter; because that union, considered exclusively as it exists in the Material Cause, is nothing more or less than the actuation of the Matter, which only exists in and by such union with the form. So much is obvious; since union with the form differs in nothing, save the mode of conceiving, from information by the form.

ARTICLE III.

The Material Cause of accidents.

The objects of human thought are manifoldly interwoven; because from Unity they spring and towards Unity they return. Concepts are their intellectual reflex and follow, therefore, the same law. Hence it comes to pass that, in a Work on metaphysics, there arises a continual necessity of forestalling, as it were, subjects of doctrine reserved for special consideration and discussion in later Books or Chapters. Consequently, it is very difficult for the author to avoid a certain amount of repetition. Indeed, it is impossible to avoid it altogether.

The present Article affords an instance in point. This Chapter is exclusively occupied with the Material Cause of Being; yet it was indispensable to the right understanding of the discussion, that some hints about the formal cause should be introduced into the last Article. In the present Article some account must be given of *form* generally, of *substance*, *accident*, *quantity*, (each of which will be afterwards discussed at length in its proper place), as a requisite introduction to the problems awaiting our attention. The explanations, however, will be as brief as possible; and the reader is referred for more elaborate treatment, to those after-

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Chapters which are *ex professo* devoted to the study of these entities.

Substance, then, is Being in its own right, so to speak. It stands by itself, without need of any Subject of inhesion. Thus, a *dog* does not inhere, or need to inhere, in some other thing, as *heat,* or *softness,* or *motion* does. It is something complete in itself,—entitatively apart from any other entity. Other things may exist in it; but its entity does not exist in any other thing as necessary to its being. Substance is either *composite* or *simple.* Composite substances are constituted of Matter and form. Such are all *bodies,* animate as well as inanimate. Simple substances are only forms. A *form* is that which gives specific nature and actuality to a thing. As giving actuality, it is likewise called *act.* That it confers a specific nature, is more expressly conveyed by the word *form.* A form may be either *substantial* or *accidental.* A *substantial* form is either *informing* or *not-informing.* An *informing form* is that which actuates Matter and constitutes a bodily substance. A *not-informing form* is in itself a complete substance; and is identical with *simple substance.* Of such nature are Angels. *Accidental forms* actuate and specify only *after a manner,* (secundum quid). For accidents are only half-beings, as it were. They inform substances already constituted or in act of constitution; and give to them a new form or mode of entity which previously they only had potentially. Thus *heat* or *cold* is an accident of *iron.* Neither the one nor the other forms any part of the essence of iron; and either can come or go, while the nature of the metal remains unchanged. Accident is called a form, then, because it informs substance with something for which that substance had only a capacity before; or at least had only a capacity, if we look exclusively to its essential constitution. An example shall be given illustrative of each of these declarations. *Heat* informs, we will say, a *bar of iron* which, previous to the application of the fire, might have been made hot by similar means but was not. It had *then* a simple capacity for heat; *afterwards* it was actuated or informed by that quality. In this latter condition it is, and has received, something that it was not and had not before. Take another kind of instance: A *man* has been born *white*; so that he always has been white from his birth. But it is no essential part of his nature, that he should be white; otherwise, there could be none but white men. Therefore, *whiteness* is an accident, even though congenital. Accidents,

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like substances, may be either *material* or *immaterial*. Examples have already been given of the former. A *thought of the mind*, an *act of the will*, a *sensation*, an *imagination*, an *act of anger*, are all instances of immaterial accidents. Of all material accidents *quantity* is the first. *Qualities* exist in bodily substance mediately, quantity immediately; that is to say, qualities immediately inhere in quantity and, through the medium of quantity, in the substantial composite. Thus, for instance, that which mankind universally calls *colour*, (that reality which is the efficient cause of the sensation), can only inhere in a body by virtue of the extension or superficies of the latter. Take away from a material substance its quantity, and it would at once cease to be visible. It is in the surface of the body, or to speak with greater philosophical accuracy, it is in the body *as* quantified that colour inheres; not immediately in the substance itself. Qualities, it may finally be observed, come and go for the most part; but quantity is congenital with material substance, so that the latter cannot naturally be divorced from it. Nevertheless, the *dimensions* of quantity may vary; as they constantly do in living things.

These preliminary notions having been sufficiently declared, we may at once enter upon the subject proposed. The first question connected with it that arises, is this: Is there a Material Cause of accidents? If so; in what sense? The second question that follows is: What is that Material Cause? The third question may be thus proposed: If composite substance be the Material Cause, what relation does the accidental form bear to each of the substantial constituents, that is to say, to the Matter and to the form? A fourth question is naturally suggested by the preceding ones: Can one accident be the Material Cause of another? Lastly: It remains to inquire, Whether immaterial or spiritual substances can become the Material Cause of accidents of a similar nature to their own? These five problems will be severally resolved in so many distinct Sections.

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§ 1.

IS THERE A MATERIAL CAUSE OF ACCIDENTS? IF SO, IN WHAT SENSE?

PROPOSITION CLVII.

There is a Material Cause of accidents.

I. This Proposition is proved, first of all, by the witness of a universal experience. The argument is precisely the same as that which has been already used in order to establish the existence of a Material Cause in corporal substance; but it has a greater cogency in the present question, because accidental are more patent to sense than substantial transformations. Indeed, it is only by means of the former that the latter become known to us. Who, then, is there, that has not constantly perceived in himself and other entities these accidental changes? At one time, the *hair* was of a *lighter colour*; then, it became *darker*; now, it is *grey*. Yet all along, I knew it to be my hair. An *apple* in the summer shows *small* and *green*; in the autumn, it has become *large* and *red*. I know that it is the same apple; yet its quantity and colour have changed. The same *water* in the kettle was first *cold*, then *hot*, then grew *cold again*. The *nugget of gold* is drawn out into a *thin wire* of amazing length; and is subsequently reduced to its *pristine form*. The *dough* was *pliant*, *cohesive*, *heavy*; the bread is *hard*, *crummy*, *light*. Yet it is substantially the same apple, the same water, the same gold, the same leavened dough from first to last. One is obliged to be so careful in these days of the empire of physical science, that it may be perhaps necessary parenthetically to disclaim any intention of being disrespectful to chemistry in our use of these illustrations. We are taking the phenomena, as they offer themselves to the uninitiated mass of mankind. It is on the common sense and observation of men that the present argument is based; and this common sense is for the most part much nearer metaphysical truth than the teaching of physical science. Nevertheless, it cannot be denied that a chemical or physical examination of these phenomena would land us at exactly the same conclusion. Now, in these and similar instances your man of common sense perceives that there are some things that are different,—that there are changes from one thing to another; yet that there is something or other which remains the same all through the changes. Moreover, he recognizes that those changing entities are successively in that one constant

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entity. Again: That the ideas and names of *green*, *red*, *hot*, *cold*, *long*, *thick*, *sticky*, *crummy*, *heavy*, *light*, *soft*, *hard*, represent something real and actual in nature, it never enters into his head to doubt. Yet, if you would endeavour to persuade him that *green* could grow up by itself like a tree, or that *heat* could form part of a house and exist by itself like a brick, or that *heaviness* could be sold by the baker like a loaf; he would judge at once that you were only fit for a lunatic asylum. But what then? Thus much: It is plain that our man of common sense judges those changing somethings to be real, yet to be incapable of existing by themselves; and to be necessarily, according to the constitution of their nature, in that *something else* that keeps them going and on which they depend. Call these changing and inhesive entities *accidents*, because they happen to substance, and his conclusions read, as follows: Accidents are somehow real things; but they cannot possibly exist in the natural order by themselves. They, therefore, require, and evidently have, a Subject to support them. That Subject, on which the accidents depend and in which they inhere, is their Material Cause.

II. The same conclusion is deduced from the philosophical concept of accidents; for this, like all other true concepts, is based on the judgments of common sense. St. Thomas shall once again be our guide, in a passage where he gives us the scientific idea of accident under different shapes. Substantial bodily 'Forms,' he writes, 'and accidents, and other like things, are not denominated beings as though they exist themselves; but because by them something exists;'—that is to say, receives a new partial existence in the accidental composite. 'Thus, *whiteness* is called being; because the Subject is white,' as, for instance, we speak of the whiteness of chalk, because chalk is white. 'Hence, according to the Philosopher, accident is said to be *of Being*, rather than *Being*. As, then, accidents and' (substantial bodily) 'forms, and such like as do not subsist,' (that is to say, do not exist by themselves, independently of a Subject), 'are co-existences rather than Beings; in the same way, they ought rather to be called concreations than creations[1],'—that is to say, when, as in the case of the elements or simple bodies,

[1] 'Formae autem, et accidentia, et alia hujusmodi non dicuntur entia, quasi ipsa sint, sed quia eis aliquid est; ut albedo ea ratione dicitur ens, quia ea subjectum est album. Unde, secundum Philosophum (7 Metaphys. text. 2), accidens magis proprie dicitur entis quam ens. Sicut igitur accidentia, et formae, et hujusmodi quae non subsistunt, magis sunt coexistentia quam entia: ita magis debent dici concreata quam creata.' 1ae xlv, 4, *c*. *Cf. Ibid.* xc, 2, *c*.

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they are purely the term of the Creative Act. Now, in this place the Angelic Doctor sets accident before us under a variety of aspects. It is, first of all, an incomplete form. Then, it is of Being, rather than Being. Further: It does not subsist. Once more: It is rather to be called a cause of existence to another than an existence itself. Finally: It is a co-existence rather than an existence. Now, if we rest a moment to take in these attributes of accident suggested by the Angelic Doctor; it will be found that each one of them implicitly contains a proof or confirmation of the Thesis. i. Accident is an *incomplete* form. This is rather implied than expressly stated by St. Thomas; nevertheless, he repeatedly states as much elsewhere. Accident is an incomplete form,—essentially so. But why? Not because it is incomplete *as* a form within the species to which it belongs; but because it is of the species of informing forms. Accordingly, it is essentially incomplete in itself and needs completing by some other entity. But how? Evidently by some Subject which may offer itself as Material Cause of its information, or actuation; because there is no other way in which an incomplete form can be completed. Therefore, accident, as being an incomplete or informing form, essentially postulates a Material Cause. ii. Accident is *of being* rather than *being*; that is to say, by its very nature, it has a transcendental relation to some other being whose it is. Such, indeed, is its essential dependence on *that other* as to deprive it, so to say, of any title to the name of Being. The *redness* of and in a *rose* one can understand; but *redness* by itself, without relation to some Subject, is a nonentity. Yet a form can have no other essential indigence of an entity distinct from itself and intrinsically necessary to its being, than as a Subject of information and inhesion. But this is exactly what is meant by a Material Cause. iii. Accident is not *subsistent*; that is to say, it does not exist *sui juris*, as pure or complete substantial forms do. Therefore, it essentially stands in need of some other entity in order that it may be; and this entity, for the reasons already alleged, will be its Material Cause. iv. It is more truly said to be a *cause of existence* to another than an *existence itself*; not that it gives absolute or simple existence to that other, but it adds a new existing entity to that other, which the latter did not possess before. *Heat* does not give absolute existence to the *bar of iron*, for this it presupposes; but it causes that the *bar* should begin to exist as a *hot bar*. If then, of itself accident can

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be hardly said to exist and all its entity, as it were, naturally belongs to another; that other, for the same reasons, can be no other than the Subject, or Material Cause, of accident. v. Accident is rather a *co-existence* than an *existence*. But this co-existence connotes a transcendental relation to some other entity which can only be its Material Cause, as being that on which its existence depends and which sustains it in existence.

NOTE I.

From what has been said, it will appear that there is no little similarity between an accidental form and Primordial Matter. For both are such attenuated entities as to be naturally incapable of existence without the support of another. Moreover, in both cases that other constituent in the integral composite is the principal and nobler element. The substantial form is far nobler than Primordial Matter; the Subject which, as we shall presently see, is complete substance, is far nobler than the accidental form. But there is this wide dissimilarity between the two; that Primordial Matter is a pure subjective potentiality, while the accidental form is an act. So again, there is this similarity between substantial and accidental forms, that both actuate their respective Subjects, and both give to them an existence in one way or the other. Moreover, if the substantial forms are exclusively material, both alike are educed out of the potentiality of their Subjects, and neither can exist apart from its Subject of information. But there are marked differences between the two. For, —not to repeat their difference of grade as constituents of their composite,—the substantial form gives specific nature and absolute existence to Matter. On the contrary, the accidental form presupposes the existence of its Subject and the complete constitution of that Subject in its essential nature, only adding thereto a new accidental manner of existence. Again: Not all substantial forms stand in need of or admit a Material Cause; all accidental forms do. Finally: There are the following differences, among others, between substance and accident,—differences mentioned here, because they are germane to the present consideration. All substance does not postulate a Material Cause; but only bodily substance. But accident naturally requires such a Subject. Further: It is to be noticed that spiritual substance may become the Material Cause of accidents, as will be seen later on; though

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it does not admit of a Material Cause in its own constitution. Once more: A Material accident cannot become the form of a spiritual substance.

NOTE II.

Accidents may be considered in the *concrete* or in the *abstract*. An accident is conceived in the concrete, when it is expressly represented as in union with its Subject. Accordingly, its grammatical form is always adjectival. Thus, *hot* water, *green* fields, *slow* travelling, a *novel* thought, a *virtuous* man, are examples of concrete accidents. An accident is conceived in the abstract, when its proper entity is exclusively represented without connotation of the Subject. Its grammatical form is substantive. Thus, the abstract concepts of the above concrete examples would be, *heat*, *greenness*, *slowness*, *novelty*, *virtue*. Out of these two distinct ways of conceiving accidents has arisen a metaphysical question which is solved in the following Proposition. The problem is this: Whether accident in the abstract,—that is to say, considered intrinsically as it is in its own entity apart from any relation to its Subject,—postulates a Material Cause. In other words, Does accident include a Material Cause as one of its intrinsic constituents?

PROPOSITION CLVIII.

Accident, considered in the abstract, does not admit of a Material Cause in its own essential constitution; but, considered in the concrete, it postulates a Material Cause with which it enters intrinsically into composition.

I. THE FIRST MEMBER of this Proposition, wherein it is asserted that *accident, considered in the abstract, does not admit of a Material Cause in its own essential constitution*, is undoubtedly the teaching of the Angelic Doctor. In a Chapter of one of his *Opuscula*, from which it will be necessary to borrow more largely in the solution of one of the difficulties, he (or whoever may be the author of this treatise) thus declares his mind: 'Since accident is not composed of Matter and form, genus and difference cannot be assumed in its case, as in that of substance,—the genus from the Matter, the difference from the form[1].' Hence, in the judgment of St. Thomas, accident in the abstract has no Material Cause in its own intrinsic

[1] 'Cum autem accidens non sit compositum ex materia et forma, non potest genus et differentia sumi in eo, sicut sumitur in substantia genus a materia, differentia a forma.' *Opusc. XLII, (aliter XXXIX), De Natura Generis, c°* 19.

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nature. The following is the proof from reason. Accident is wholly in itself a form, according to the declarations made in the preceding Proposition. Its office or function is to actuate,—to give to its Subject a new mode of existence. But this is diametrically opposed to the nature of a purely passive potentiality. Corporal substance, indeed, requires a Material Cause to sustain the actuating form, and so to attain to its own subsistence as a complete entity. Nevertheless, Matter in itself does not contribute, except instrumentally, to the activity of substance; it would rather seem as though in some ways it limits and even hinders that activity. But accident does not subsist by itself, and is essentially incomplete. Therefore, in its own abstract Being it stands in no need of a Material Cause. Let us suppose, however, for the sake of argument, that accident is intrinsically composed of Matter as one of its essential constituents. In such hypothesis the Matter must either remain the same under diverse forms, or it must perish with the form. The first horn of the dilemma could not be reasonably accepted or maintained. For then a *square* could be made out of an *angle*, *sweetness* out of *bitterness*, *softness* out of *roughness*, *love* out of *hatred*, a *thought* out of a *desire*,—not in the Subject of inhesion, but in the accident itself, by a transformation similar to that which takes place in corporal substance. But what of the other horn of the dilemma? If this supposed Matter should change with every change of form, it could be of no service to the change itself. For all change requires a constant Subject remaining the same throughout. It could not, on the other hand, be of any service to the informing of the Subject of inhesion; for Matter, if anything, hinders actuation, in that it is purely passive. Therefore, it would be entirely useless. But, as the Philosopher observes in his *Nicomachean Ethics*, nature makes nothing in vain. Finally: if an accident were composed of Matter and form, *its* form should be subject to a like composition; for there is just as much reason for the one as for the other. The form, again, of this last-named composition would be under the same necessity; and so on, for ever. But to require an infinite series for the producing of a single entity,—say, of *the sweet smell of this lily*, is tantamount to the impossibility of its production. Whether an infinite series of alternate generation and corruption be possible or not, is quite another question. There is all the difference between an infinite series *in producing* and an infinite series *of productions*.

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II. The second Member, in which it is declared that *accident, considered in the concrete, postulates a Material Cause with which it enters intrinsically into composition*,—that is to say, with which it enters into a composition of which itself is an intrinsic constituent,—agrees with the teaching of the Angelic Doctor. Take in proof the following passages from his writings: 'Properly speaking, it is not consonant with the nature of any not-subsistent form to be made. But such forms are said to be made' (or, produced), 'because the subsisting composites are made[1]'; that is to say, they subsist and are said to be made because the subsisting Subject is made, with which they enter intrinsically into composition. Again: 'It is of the nature of accident to inhere and depend; and consequently, to enter into composition with the Subject[2].' Once more: In answer to an objection touching the nature of *contrary opposition*, St. Thomas incidentally remarks, that in substance 'the genus is taken from the Matter; but in accidents the Subject is in the stead of Matter[3]'; that is to say, that the Subject is the Material Cause of accident considered in the concrete.

The declaration of this Member of the Thesis is as follows. The accidental composite,—say, for the sake of illustration, *this white horse*,—is intrinsically composed of the Subject, *this horse*, and the quality of *white* in the horse. In this composition, *the horse*, as Subject, has in its essentially constituted entity a passive capacity for receiving the colour of *white*. This colour by information of its Subject actuates that potentiality. Hence, *this is a white horse*. In such composition, then, the Subject exhibits itself, relatively to the accidental form, as a pure receptivity, whatever may be its own substantial constitution and its active powers as it is absolutely in itself. Hence it is the Material Cause of the accident; and accident informs, and so far actuates it, after the same manner as the substantial form in the substantial composite. The union between the two is immediate; and the causality is simply the union of the Subject with its accident.

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[1] 'Et ideo nulli formae non subsistenti proprie convenit fieri, sed dicuntur fieri per hoc quod composita subsistentia fiunt.' 1ae xc, 2, *c*.

[2] 'Ratio accidentis imperfectionem continet; quia esse accidentis est inesse et dependere, et compositionem facere cum subjecto per consequens.' 1 *d*. viii, *Q*. 4, *a*. 3, *c*.

[3] 'Genus sumitur ex materia; . . . in accidentibus autem loco materiae est subjectum.' 1-2ae xxxv, 4, 2m.

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DIFFICULTIES.

I. The first difficulty is urged against the first Member of the Thesis. All entities that are composed of potentiality and act must have a Material Cause. But accident in the abstract is composed of potentiality and act; for, prior to its actuality in some Subject, it is in potentiality to some Subject. Therefore, accident, even in the abstract, admits a Material Cause.

ANSWER. The *Major* needs to be distinguished. *All entities that are composed of potentiality and act*, both being real and physically distinct, *admit of a Material Cause*,—granted; *all entities that are composed of potentiality and act*, when the two are not both real and physically distinct,—we must subdistinguish: *admit of a Material Cause* univocally,—denied; in an analogical and secondary sense,—let it pass, or even granted. The *Minor* is contradistinguished. *Accidental form, even in the abstract, is composed of potentiality and act*, which are not both real and physically distinct, granted; which are both real and physically distinct,—denied. The Conclusion, therefore, subject to the given distinction is denied. It may not be amiss to subjoin a brief explanation of the above answer. In order to be justified in the assertion that an entity admits within itself of a Material Cause, it behoves us to show that such entity is physically composed of a real subjective potentiality and its real informing act; unless, indeed, one is using the term, Material Cause, in some analogical or metaphorical sense. But this is an impossibility, in the instance of accident considered in the abstract. For accident in the abstract has, can have, no existence. It is a mental abstraction, based upon concrete accident. If, then, it has no physical existence itself; how can it be composed of two constituents physically distinct?

II. The second objection is directed against the same Member of the Thesis. It is this. All entities that have a genus and difference, admit a Material Cause; for their genus is the Material, their difference the Formal Cause. But accident has its genus and difference. For instance, in *white colour quality* is the highest genus; *colour*, the proximate genus; *whiteness*—or rather *white*—the difference.

ANSWER. The argument might be simply ended, by insisting on the fact that accidents in the abstract are not physical entities;

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but concepts of the mind, founded in reality. Since, however, by *accident in the abstract* may be meant the entity of the accident as it is in itself, apart from its union in a given Subject, (for an entity of its own most assuredly it has, however imperfect), and as there is a certain verisimilitude in the objection (for accidents, in some way or other, do seem to fall under genera and species); it will be more satisfactory to give a direct answer to the difficulty. This shall be done in the words of St. Thomas. 'You must know,' he writes, 'that in accidents, as they exist in nature, there is nothing to correspond with the operation of the intellect in such wise, that they should be capable of receiving, like substance, the formal nature of genus and differences. For the essence of accident, as designated in the abstract, does not apparently represent any real entity. For the abstract represents a thing as existing by itself. But an accident cannot exist by itself. Wherefore, accident in the abstract does not apparently represent any true entity. It is to be observed, that the signification which is conveyed by names does not appertain to the natures of entities, save through the medium of an intellectual concept; since words are symbols of impressions in the soul, as it is said in the Book *De Interpretatione*. Now, the intellect can cognize separately by themselves entities that exist in a state of union. But that which is cognized by itself separately, has the semblance of existing by itself; and, consequently, is represented by an abstract name which signifies its separation from other. . . . In this way, then, by the action of the intellect the abstract names of accidents represent entities that do indeed inhere, though they do not represent them *as* inherent. Wherefore, by the action of the intellect names are formed as though they were certain realities to which the same intellect subsequently attributes concepts of genera and species. But there was nothing in the nature of the entities, on which the intellect could base such universal concepts. Since, then, accident is not composed of Matter and form, in its case the genus and difference cannot be taken, as in the case of substance,—the genus from the Matter and the difference from the form; but in each and all of the accidents the genus must be assumed from that which is first discoverable in it, and the difference from that which is added subsequently. Now, that which is first discoverable in any accident, is a special mode of Being including a certain diversity from other modes of the same. Thus, for instance, in quantity there is a special mode of

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accidental being' (*entis per aliud*, as distinguished from *ens per se*), 'viz. that it is the measure of substance' (i.e. material substance); 'and in quality, viz. that it is the disposition of substance; and so on, in each case. . . . The difference, however, must be assumed, in the instance of accidents, from something that is implicitly contained in that mode from which the genus of accident has been derived. Now, this is discovered in the diversity of principiants from which the accidents are caused. Thus, for instance, the character of measure is found in quantity; and this is common to every species of quantity. Hence it has received the name of a genus. But it is plain that successive are of their nature different principiants from permanent entities; and accordingly, they have different measures. Hence it is that, when accidents are defined in the abstract, the Subject is included obliquely in their definition and in the second place; which properly belongs to the difference. Thus, it is said that *snubbiness is a curvature of the nose*; by which snubbiness is distinguished from a curvature in wood[1].'

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[1] Sciendum est igitur, quod in accidentibus in rerum natura non est aliquid correspondens operationi intellectus, eo modo quo possint rationem generis et differentiarum recipere, sicut est in substantia. Essentia enim accidentis designata in abstracto non videtur ens aliquod significare; cum abstractum significet ut per se existens: accidens autem per se esse non potest: unde accidens in abstracto non videtur ens aliquod significare. Sed significatio quae importatur in nominibus, non pertinet ad naturas rerum, nisi mediante conceptione intellectus; cum voces sint notae passionum quae sunt in anima, ut dicitur in libro Perihermenias. Intellectus autem potest seorsum intelligere ea quae sunt conjuncta. Illud autem quod seorsum accipitur, videtur ut per se existens; et ideo designatur nomine abstracto, quod significat remotionem ejus ab alio. . . . Sic ergo per actionem intellectus nomina abstracta accidentium significant entia, quae quidem inhaerent, licet non significent ea per modum inhaerentium. Unde per actionem intellectus efficiuntur nomina quasi res quaedam, quibus idem intellectus postea attribuit intentiones generum et specierum. Nihil vero in natura rerum fuit, super quod intellectus fundaret intentiones universales. Cum autem accidens non sit compositum ex materia et forma, non potest genus et differentia sumi in eo, sicut sumitur in substantia genus a materia, differentia a forma; sed in unoquoque accidentium genus debet sumi ab eo quod prius in eo reperitur, differentia vero ab eo quod post accidit. Primum autem quod invenitur in quolibet accidente, est specialis modus entis includens diversitatem quamdam ad alios ejus modos: sicut in quantitate est specialis modus entis per aliud, scilicet quod sit mensura substantiae; et in qualitate, quod sit dispositio ejus; et sic de singulis. . . . Differentia vero debet sumi in eis per aliquid quod in illo modo a quo genus accidentis acceptum est, implicite contineatur. Hoc autem invenitur in diversitate principiorum ex quibus causantur; sicut, verbi gratia, ratio mensurae reperitur in quantitate, et hoc est commune omni speciei quantitatis, et ab hoc est acceptum nomen generis. Sed constat, quod successiva sunt diversa principia in natura sua a permanentibus; et ideo naturaliter diversas habent mensuras' (Exinde continuam inter ac discretam quantitatem distinctio specifica). 'Et inde est, quod

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St. Thomas, then, teaches in this passage, that accidents in the abstract are mere concepts of the intellect which considers as separate and *sui juris* entities that only exist in composition with others. Under this abstract and purely conceptual form they have been treated as though they were subsistences, and have been divided into genera and species. Now, though in no case are genera and species, as such, realities; yet they are founded in reality. For composite subsistences, or complete substances, supply a basis for genus in their Material Part, which is common and indifferent; for difference in their formal part, which is specific and discrete. But accidents cannot show as much reality as this to account for their division into genera and species; because in themselves they are next to nothing. Consequently, though, as modes of their Subject affecting it differently each from the other, they in the concrete afford something like a basis for generic distinction,—since, for instance, quantity is a mode of measure, quality of disposition; nevertheless, their specific distinctions must be sought for, not in themselves but in their principiants or causes. Thus, if you would discover the basis of the specific distinction between continuous and discrete quantity, you must seek it in the quantified entities themselves as the principiants of quantity. For, if it is the nature of a Subject to be successive, as in a series of *alternate corruptions and generations*, or of *words in a sentence*, or of *notes in music*, or of *moments in time*; its measure must be specifically different from that of a permanent entity, like the *sun* or a *man* or a *mountain*. Wherefore, accidents in the abstract cannot, properly speaking, be specifically divided; forasmuch as, so considered, they are conceptually separated from their Subject. If the attempt is to be made, the Subject must be brought back in order to supply the place of a difference. Thus, snubbiness is a curvature *of the nose*; Discrete quantity is the quantity *of successive entities*; continuous, *of permanent entities*: the genitive or oblique case in the second place of the phrase supplying the *differentia*. Hence, accidents in the abstract do not admit a Material Cause, because they are not intrinsically composed of Matter and form; while in the concrete they require one.

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cum definiuntur accidentia in abstracto, subjectum ponitur in eorum definitione oblique et secundo loco; et hoc est proprium differentiae; ut cum dicitur, simitas est curvitas nasi, per quod differt simitas a curvitate quae est in ligno.' *Opusc. XLII, (aliter XXXIX), de Natura Generis*, c° 19.

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III. The third objection is directed against the second member of the Proposition; and is as follows. It is contrary to the teaching of St. Thomas, that accident in the concrete should postulate a Material Cause with which to enter intrinsically into composition. For the Angelic Doctor asserts, that 'the Subject is not included in the representation of the word that stands for accident in the concrete, as the Commentator says; though Avicenna was of the contrary opinion [1].' But, if the accident does not enter into the representation of accident in the concrete, accident does not postulate a Material Cause; neither can it enter intrinsically into composition with the same.

Answer. There are two ways in which this passage of the Angelic Doctor may be explained; each one of which leaves the truth of the Proposition unassailed. St. Thomas, then, agrees with Averrhöes in maintaining, that a word signifying accident *concretivè* does not include in its signification the Subject of the accident. Now, i. He may mean by the Latin word *concretivè*, *substantially*,—that is, under the form of a noun; which would be tantamount to accident in the abstract. Such an interpretation is fully justified by the context; for the particular word that excites the discussion is *gift*, which is certainly under a substantive form. But, ii. If the Latin adverb means, *in the concrete*, the ensuing is the only possible and most natural explanation. A word which expresses an accident in the concrete,—to take an instance, *white*,—does not determine its Subject; though it connotes some subject or other indefinitely. It *must* be a white something; but it *may* be a white anything. Anyhow, that it is a mere question about the meaning of words is expressly stated by the Angelic Doctor who in the same place maintains that the Subject is included in the concept, while he speaks hesitatingly about the verbal meaning [2]. Nor could it for one moment be supposed that he would here contradict that which in other places, as we have seen, he has so clearly asserted.

IV. Again: Against the second Member of the present Thesis,

[1] 'Subjectum non includitur in significatione nominis significantis accidens concretive, ut dicit Commentator (5 Metaph. text. 14), quamvis Avicenna (6 Natural. part 1, cap. 2.) contrarium senserit.' 1 *d.* xviii, *a.* 2, 3[m].

[2] 'Hoc nomen *donum* vel *datum*, praeter relationem ex qua dicitur donum vel datum, dat intelligere rem quamdam quae datur; quamvis *forte* non sicut partem significationis nominis, quia subjectum,' &c., as in the preceding note.

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the following objection has been urged. A composition by accident does not postulate a Material Cause. But accidental composition is composition by accident. The *Major* is confirmed by an example. *A heap of stones* does not require a real material cause in order to be a heap; nor do the *bricks, mortar, rafters, etc.* that constitute a *house* require a material cause, in order to constitute that house.

ANSWER. Let the *Major* pass. The *Minor* is denied. There is the most observable difference between a composition of substances by accident,—for instance, *an aggregation of stones by the wayside*,—and the composition of an accident with its Subject. The one is fortuitous; the other, intended by nature. Again: The one is extrinsic; the other, intrinsic. Once more: The former is either conceptual or artistic; the other is natural. It is an amphibology to call both indifferently an accidental composition. Nevertheless, it is worth remarking that, even in the case of composition by accident, there is need (speaking analogically) of a Material Cause. For, in the heap of stones, there is a certain order and proximity of position which serves in the mind for a form; but then, *the stones themselves* assume the character of a Material Cause. So, in the instance of a house: The collocation of materials, the subordination of parts, the mutual adaptation, &c. for the purposes of habitation, constitute the artistic form; but *the materials themselves*, as receptive of the design, are the Material Cause. In fact, these combinations by accident offer a much greater difficulty as touching the form than as regards the Matter; for the former is conceptual, while the latter is real.

PROPOSITION CLIX.

Accident, by virtue of its own entity considered apart and in the abstract, postulates a Material Cause, in order that it may be sustained in its being. Such Material Cause is equally requisite for the producing, as for the perfected production of accident; though it is extrinsic to the entity of accident itself.

The present Proposition is so manifestly a Corollary from the two previous Propositions, as to stand in need of only a brief declaration. For it has been proved in the *hundred and fifty-seventh* Thesis that accident, by reason of its attenuated entity, stands in

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need of a Material Cause. But in the *hundred and fifty-eighth* Thesis it has been shown, that accident in the abstract does not admit of a Material Cause as intrinsic in its own nature. Therefore, it must require a Material Cause as extrinsic Subject both of its production and of its maintenance, according to the exigency of its nature; for there is no other conceivable function of a Material Cause. Furthermore: Accident requires this support, not merely for the sake of union with its Subject, (for thus much even the human soul exacts); but in order that it may be produced, and that it may be maintained in being. Both of these reasons are given by the Angelic Doctor. Touching the accidental union, he makes this observation: 'Because all accidents are certain forms superadded to substance and caused by the principiants of substance, it is necessary that their entity should be superadded to the entity of substance, and dependent upon it[1].' So, somewhat more generally he remarks: 'Whatever the signification given to it, accident has a dependence on the Subject in accordance with its nature[2].' Therefore, whether accident be considered in the concrete or the abstract, it includes in its nature a dependence on a Material Cause. Referring in another place more particularly to the entity itself of accident as postulatory of such a cause, he makes the following observation: 'Because to be is the act of Being, but the verb, *to be in,* expresses the inherence of accident; therefore, to inhere in a perfect (or complete) entity is the essence of accident, which is necessarily extraneous to the nature of that entity. For the expression, *to inhere,* does not mean that the essence of accident is in the essence itself of substance; since essence is that which most formally belongs to every thing[3].' Therefore, it is of the essence of accident to postulate a Material Cause on which it may depend. Once more: 'It is the nature of

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[1] 'Quia enim omnia accidentia sunt formae quaedam substantiae superadditae et a principiis substantiae causatae, oportet quod eorum esse sit superadditum supra esse substantiae et ab ipso dependens.' *Cg. L. IV, c°* 14, *v. fi.*

[2] 'Quocumque modo significetur accidens, habet dependentiam a subjecto secundum suam rationem.' 1-2^{ae} liii, 2, 3^{m}.

[3] 'Quia esse est actus entis, hoc autem verbum "inesse" est designans inhaerentiam accidentis; ideo inesse rei perfectae est esse accidentis, quod extraneum a rei natura esse necesse est. Non enim significatur per hoc inesse, quod accidentis esse sit in ipso esse substantiae, cum esse sit formalissimum omni rei.' *Opusc. XLI, (aliter XXXVIII), De Natura Accidentis, c°.* 1, init. The meaning of this passage is plain enough; but it is impossible to express its antithetical force in English.

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accident to inhere in the entity itself[1];'—that is to say, immediately. Finally: It is evident from all which has gone before, that accident stands in need of a Material Cause for its producing as well as its perfected and permanent production in the accidental composite; for its essential dependence is the same in both cases. In this respect it is similar to the substantial form of bodies; for it is evolved from the potentiality of the substance, as the latter is evolved out of the potentiality of Matter.

§ 2.

What is the Material Cause of accidents, and what the nature of its causality?

PROPOSITION CLX.

Substance is the primary and fundamental Material Cause of accident.

This Proposition is nothing more than a Corollary from the doctrine established in the preceding Section. For, if accident in general has essentially an entity so attentuated that naturally it can only co-exist with another on which it depends for its being and continuance; it is plain that no accident can be the primary and fundamental Material Cause of accident, for the former would stand in need of such a cause itself. Therefore, it must be substance; since substance and accident divide all real Being between them.

PROPOSITION CLXI.

Any integrating part of corporal substance can separately be the Material Cause of accident.

Owing to the nature of its subject-matter, the present Proposition virtually contains two Members. For an integrating part of any body may be either heterogeneous or homogeneous relatively to other parts of the same body. Thus, for instance, in the body of an animal, the *bones*, *blood*, *heart*, *hair*, are heterogeneous parts respectively; forasmuch as they are each dissimilar from the other. But one hair is homogeneous with another, one piece of *skin* or of *bone*

[1] 'Natura accidentis est inesse, sive inhaerere ipsi rei.' *Ibidem.*

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with another piece, one *eye* with the other, and so on. Hence, as the Enunciation is universal, it asserts both of heterogeneous and homogeneous parts, that they can separately be the Material Cause of accidents. Wherefore,

I. *Any integrating heterogeneous part of bodily substance can be separately a Material Cause of accidents.* This is manifest from experimental induction. Thus, the quantity of one part is different from the quantity of another part; since, in many cases, one quantity is physically separate from the other, as in the *blood*, in *hairs*, *bones*, *etc.* Moreover, it is of constant recurrence, that the qualities in one part are distinct from, and often opposed to, those in another. For example, the *blood* has qualities of *colour*, *liquidness*, *chemical composition*, widely different from, and in part opposed to, those of the *bones*. So marked is this quantitative and qualitative isolation in the instance of the blood, that Suarez judges this latter to be an incomplete substance with its own particular subsistence; and he adds that such was the all but universal opinion of the School. Further: It is by virtue of the variety of accidental forms in the diverse parts and organs of living bodies that the substantial form is enabled to exercise that multiplicity of functions, so useful and even necessary to the sustentation of life.

II. *Any integrating homogeneous part of bodily substance can separately be a Material Cause of accidents.* This, too, is manifest from experimental induction, whenever the homogeneous parts exist in a state of separation. Thus, in each of the *two horns of an ox*, in each of *a man's nails*, in each *feather of a bird*, you have a quantity and, consequently, qualities in each, proper to each and numerically distinct. But what is to be said of continuous homogeneous parts which are only separable, but not actually separate, from each other? First of all, let it be borne in mind that, under such circumstances, they are only potentially parts, divisible but not divided. Nevertheless, by virtue of its extension any physical molecule or corpuscle is capable, separately in itself, of being a Material Cause of accidents. Hence it not unfrequently happens that, in one continuous and homogeneous substance, distinct qualities are to be seen in different places. Thus, for instance, the same *apple* is here *green*, there *red*. So, one and the same *hair of a badger* or the same *feather of a pheasant or partridge* has a variety of colour.

The fundamental reason, which is applicable alike to each Member of the Thesis, is this. Any bodily substance is not only capable of,

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but requires accidental information, as a natural condition of its existence. Matter, existing as part of a substantial composite, needs qualification. The substantial form requires qualities proportioned to its nature, by means of which it may energize. But, first of all, any separate part of a body by virtue of its separation requires its own quantity and, consequently, its own qualities; which latter, if not specifically, are at least numerically, distinct. Secondly, if the so-called parts are not separate, they are only potentially parts. In such case the quantity is actually one, though potentially many because partitive. But, because it is continuous quantity, it admits, within the limits of its extension, a plurality of qualities even appertaining to the same species.

PROPOSITION CLXII.

Substance in virtue of its own potentiality, without the addition of any accidental or modal entity really distinct from itself, is the Material Cause of accident. Otherwise: Substance receives accident immediately in itself.

Prolegomenon.

After having determined the fundamental Material Cause of accidents in the two preceding Theses, it now remains to inquire *by what* substance causes in the accidental composite; in order that the nature of its causality may be more clearly appreciated. Touching the question here proposed, there has been a diversity of opinion in the School. Nevertheless, as the controversy is a counterpart of that which has been already considered in the preceding Article relatively to Primordial Matter, and the resolution of the problem is identical in both cases; it would not have appeared here again under the form of a Proposition, had it not been that in the present instance a special philosophical difficulty offers itself, which is worth considering. Nor is this all. For while the difficulty referred to has a special interest and importance of its own which claim our consideration; the treatment of it and its solution assume the force of an obligation, in presence of the fact that it compromises the teaching of the Angelic Doctor.

It has been maintained, then, by one School of Doctors, that substance causes accident and the accidental composite by the intervention of a potentiality really distinct from the substance itself. Another School has taught, that it causes by means of a real mode

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Lastly: Others maintain that substance immediately and of itself exercises its causality in accident and the accidental composite. This last opinion it is that is defended in the present Thesis. The reader should be again reminded here, that a mode differs from an accident *specifically* such, (for, *generically* understood, accident includes all modes that are not substantial), in its inferiority to the latter and, as a consequence, in the nature of its inhesion. A mode has, and can have, no entity whatsoever apart from its Subject. Hence, it could not be made, even by the Divine Omnipotence, to exist apart from its Subject; because such existence is a metaphysical impossibility,—in other words, a contradiction in terms. An accident, on the contrary, has a real albeit attenuated entity of its own; and can, therefore, exist apart from substance by the Power of God, though always retaining its natural tendency towards inhesion in a Subject, which is essential to it.

The present Proposition is demonstrated by proving that in this material causality of substance relatively to the accidental composite there can be no intervention, first, of a real accidental potentiality, secondly, no intervention of a real mode. Consequently, the causality of substance is immediate.

I. *There can be no intervention of a real accidental potentiality really distinct from substance, in order that this latter may be made proximately capable of becoming the Material Cause of accident.*

THE FIRST MEMBER is proved by the following arguments. i. The intervention of such a potentiality involves an infinite process. For, according to the hypothesis in question, the said potentiality is an accident. Indeed, there is nothing else it could be. Therefore, the question returns: How does substance become the Material Cause of this accident? It must be either immediately by itself or through the medium of another accident. If the former, the hypothesis is subverted; and there is no assignable reason why immediateness of causality should not be conceded in the first instance as well as in the second. If the latter, again returns the question about that third accident; and so on, for ever. ii. The hypothesis is in open contradiction with the universally admitted doctrine touching the Material Cause of accident, as enounced in the *hundred and sixtieth* Proposition. For if substance be the primary and fundamental Material Cause of accident; to whatever length you may please to multiply your links in the chain of accidents, you must ultimately arrive at an accident which is immediately

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united to substance. iii. A third argument is derived from the respective natures of substance and accident in their transcendental relation to each other. For accident has a natural inclination for finite substance; in order that, by informing, it may perfect substance and impart to substance that which, of itself, substance does not possess. Therefore, on the other hand, finite substance must possess in itself a corresponding inclination and immediate capacity for such information. If so, the intervention of an extraneous entity is an impertinence. Therefore, it must be rejected; according to the time-honoured philosophical axiom, that *entities ought not to be multiplied without a necessity.*

II. *There can be no intervention of a real mode distinct from substance, in order that the latter may become Material Cause of accident.*

THIS SECOND MEMBER of the present Proposition is so obviously demonstrated by the same arguments as those which have been produced to establish the first, that there is no need of further amplification.

NOTE.

Nothing need be added, either touching that by which substance causes in accident and in the accidental composite or touching the nature of that causality; since the conclusions already deduced concerning the causality of Primordial Matter, hold equally good in the causality of substance relatively to the accidental composite.

DIFFICULTY.

The one great objection urged against the present Proposition is seemingly derived from the teaching of St. Thomas. The Angelic Doctor is discussing the question, whether a faculty of the soul is the soul itself. He decides in the negative; adding elsewhere, (for he repeatedly reverts to the same point in his teaching), that the faculties of the soul are accidents in the second species of Quality[1], —accidents, however, that are properties, that is to say, flowing from the essence. His primary argument in proof is the following: 'Since potentiality and act divide Being and every Category of Being, the potentiality and (its) act must necessarily be referred to the same Category. Consequently, if the act is not in the Category of Substance; the potentiality, which is denominated such in rela-

[1] See 1^a^ lxxvii, 1, 5^m^; *Spiritu, a.* 11, *c.*

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tion to that act, cannot be in the Category of Substance[1].' But, if it be true that the potentiality and its act must necessarily be referred to the same Category, substance cannot *immediately* be the Material Cause of any accident; otherwise, the potentiality would be in one Category and its act in another. There must, consequently, intervene some accidental potentiality or mode between the two, as proximate principle of causality.

ANSWER. Suarez is evidently troubled with this difficulty; and though, out of his wonted reverence for the authority of the Angelic Doctor, he strives to make the best of it, nevertheless, he seems altogether to deny the truth of the *dictum* as applied to active potentialities, and allows only its partial applicability to passive potentialities. For while somewhat grudgingly admitting its truth in the case of a passive potentiality essentially ordained to such act, as Primordial Matter is; he refuses to own its applicability to passive potentialities intrinsically included in, and concomitants of, any complete entity. But of such sort is the potentiality in dispute,—that, namely, of substance as receptive of accident[2].

With all due deference to the opinion of so eminent a philosopher, there does not seem to be any sufficient reason for all these distinctions or exceptions. The *dictum* of St. Thomas, if rightly understood, is equally applicable to all active as well as passive potentialities. Previously, however, to entering upon the solution of this difficulty, it is necessary to interpose two preliminary observations. i. The distinction between the active potentiality and its Subject is not in all strictness of language physical. This would appear to have been the mind of St. Thomas in the special instance to which he has applied the principle, as quoted above. There are grave reasons (as it seems to the present writer) for concluding that he never intended to establish a physical distinction, strictly speaking, between the human soul and its faculties. For, first of all, he affirms that the human soul is a simple form[3]. But, if its essence and its faculties were physically distinct, it would be a composite. Then again, he admits that, if it is considered 'as a potential whole,

[1] 'Cum potentia et actus dividant ens, et quodlibet genus entis, oportet quod ad idem genus referatur potentia et actus; et ideo, si actus non est in genere substantiae, potentia quae dicitur ad illum actum, non potest esse in genere substantiae.' 1ª lxxvii, 1, *c.*

[2] *Metaphysica, Disp. XIV, Sect.* 2, *nn.* 12–17.

[3] 'Quamvis anima sit forma simplex, sicut et Angelus.' 2 *d.* iii, *Q.* 1, *a.* 4, 1ⁿ.

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they' (i.e. its faculties) 'belong to its integrity[1].' Further, he declares that 'though the soul may be *conceived* without its faculties, it is neither possible nor conceivable that it should *be* without them[2].' But, if the psychical faculties were accidents physically distinct from the soul; why should it be neither possible nor conceivable that the soul should exist without them? ii. The second preliminary observation is this; that in active potentialities (powers or faculties) the act may be immanent or transient. For instance, a thought is an immanent act of the intellectual faculty. But the act of a physical force is transient,—the attraction of a magnet, for instance; since its formal term is another body,—in the example given, say, a needle. Now, the transient act may itself be regarded in two ways; first, as it is in the potentiality of which it is the act (*entitatively*) and, secondly, as it is in the entity that receives it (*productively*). Regarded in the former light, it is the form of the faculty or power; in the latter, it is the act of an efficient cause.

Under guidance of these premonitions, let us now proceed to summarize the teaching of the Angelic Doctor touching the present subject; and, in doing so, it will be no small advantage to bear in mind, by way of illustration, that particular problem which has repeatedly provoked the discussion in the writings of St. Thomas concerning the soul and its faculties.

In every created substance there are two potentialities and two acts. There is the primary potentiality *to be*, or *of being;* and correlatively, the primary act *of being*. This is called its *first* act. The act is the form; in bodies, the potentiality would be Primordial Matter. The two constitute the specific substance. Hence, the potentiality is substantial; the act is substantial. By the union of the two is completed the essence of the substantial entity. But there is another second act of substance, consequent upon its essential constitution; for each one has its own determined, its own specific operation. And the reason why this operation must be consequent upon the complete constitution of the essence, is this; a thing must *be*, before it can *act* or have even the *power of acting*. This act is called the *second* act of substance; forasmuch as it follows after the first. It, too, postulates as its correlative a poten-

[1] 'Simul tamen sunt de integritate ipsius animae, inquantum est totum potentiale.' 1 *d.* iii, *Q.* 4, *a.* 2, *c.*

[2] 'Unde licet sine illis intelligatur quid sit anima, non autem animam sine eis esse est possibile neque intelligibile.' *Anima, a.* xii, 7[m].

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tiality, or power, of operation. Now, it is on this second act and second potentiality that the present question turns. Are the two identical with the first act and the first potentiality? St. Thomas repeatedly demonstrates that they are not. Only in one Being are the two identified; because all He is and has, is one infinitely pure Act, remote from every conceivable potentiality. Hence, in Him to be and to do, are absolutely the same. But in all finite entity being and operation are really distinct. The one is a substantial, the other an accidental act. Hence, the first act or the substantial form is, so to say, exhausted in the actuation of specific being. In like manner, the substantial potentiality is fulfilled by the actuation of its substantial form. Thus essentially perfected, substance can admit of no further substantial potentiality whether it be passive or active. Neither is it capable of any additional substantial act. It remains, therefore, that the second potentiality and the second act should be accidental,—extraneous, that is, to the already constituted essence. The reader, however, may here need reminding, that the principiant or principiants of specific operation are not mere accidents in the *logical* sense of the term; because they are properties, that is to say, they are rooted in,—flow forth from,—are connatural with,—the essence. Hence, in the case of active potentialities, the substantial form is the principal, the accidental form the proximate and, as it were, instrumental principiant. Wherefore, the active powers or faculties may be terminated by transient acts which productively go beyond their potentiality, and are substantial; because they *cause* by virtue of the substantial form. But the *entitative, informing*, or *immanent* act of the faculty is, and must be, accidental; and in the same Category as the faculty which it informs. Reverse the position; and the potentiality must be in the same Category with its act. Accordingly, as the Angelic Doctor goes on to say, material substance requires qualities, or certain accidental forms, by means of which its substantial form may operate. Thus, the *magnet* has its one substantial form; but it requires two powers,—the one of *attraction*, the other of *polarization*,—in order that it may be able to operate according to the bent of its specific nature. For the essential form, as being one and material, could not at one and the same time *immediately* energize in two such different directions. The case is precisely similar with the human soul. This latter is essentially the form of man, and gives to him his substantial perfectness and specific nature. Yet,

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though intellectual and volitive in its nature,—that is to say, as a substantial act, and, therefore, as *first* act; the soul cannot operate immediately or exclusively, in virtue of its own intellectual and volitive essence. It requires faculties, or active potentialities, as second and proximate causes of its *second* act,—that of natural operation. But why? In order to arrive at the reason, may it be permitted to put another question? How is it that the soul, one and simple in its essence, can operate in so many distinct and often opposite ways at one and the same time;—vegetatively, sensitively, imaginatively, intellectually, volitively? St. Thomas supplies us with an answer: 'Though the soul is one in essence,' he writes in a certain place, 'nevertheless, there is in it potentiality and act; and it has a diversity of relation to entities. Moreover, it adapts itself in different ways to the body. And this is the reason why, from the one essence of the soul, diverse faculties can proceed[1].' So again: 'Though the soul is a simple form in its essence; it is, nevertheless, virtually multiplex, forasmuch as it is the principiant of diverse operations[2].' Yet again: 'The soul has a certain perfection of potentiality which is *made up* of various faculties[3].' Finally: 'The essence of the soul itself is also the principiant of operation, but by the medium of a faculty[4].' It seems plain, then, that St. Thomas did not contemplate a physical distinction in all strictness of language between the soul and its faculties; otherwise, he would never have allowed that the soul was *made up* of its faculties, *was virtually multiplex*, without the addition of any modifying words. The first passage quoted evinces this more clearly. For St. Thomas represents the faculties as the potentiality of the essence of the soul, which variously corresponds with a diversity of relation to entities. These faculties are only not the essence, or rather, part of the essence; because they belong to that second potentiality which does not enter into the definition and whose acts are accidental. The same conclusion is deducible from another passage, wherein St. Thomas replies to

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[1] 'Licet anima sit una in essentia, tamen est in ea potentia et actus, et habet diversam habitudinem ad res; diversimode etiam comparatur ad corpus; et propter hoc ab una essentia animae possunt procedere diversae potentiae.' *Anima*, *a.* xii, 17[m].

[2] 'Licet anima sit forma simplex secundum essentiam, est tamen multiplex virtute, secundum quod est principium diversarum operationum.' *Ibid.* *a.* ix, 14[m].

[3] 'Habens quandam perfectionem potentiae, quae conficitur ex diversis viribus.' 1 *d.* iii, *Q.* 4, *a.* 2, *c.*

[4] 'Essentia ipsius animae est etiam principium operandi, sed mediante virtute.' *Ibidem*, 2[m].

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an objection brought against this his teaching concerning the faculties of the soul. The objection is as follows: 'The soul is nobler than an accidental form. But the active accidental form is its own virtue. Therefore, with much greater reason is the soul its own faculties.' St. Thomas would seem to have foreseen a dilemma with which he might be confronted. For should he deny the *Minor,* he would be involved in an infinite process; should he grant it, he must accept the conclusion. Accordingly, he replies by a virtual distinction of the *Minor*, in these words: 'The accidental form, which is the principiant of action, is itself the faculty or power of the acting substance; and there is no infinite process, as though for every faculty there should be another faculty[1].' But this would be no answer at all; if he had supposed a physical distinction between the soul and its faculties.

Now, perhaps, we shall be the better able to understand the nature and bearings of the disputed *dictum.* Considering an act exclusively as the form by which a potentiality is actuated, nothing can be plainer than that the potentiality and its act must be in the same Category; and not only in the same Category, but in the same class or species of the same Category. Consequently, if the soul, *as* the substantial form of man, were immediate Material Cause of human acts,—for instance, acts of thought or will; these acts would be substantial parts of man's essential constitution. Thus the soul would be partly in potentiality to its own essence; which is not convenient. It follows, then, from the absurdity of its opposite, that the active potentialities of the soul,—the immediate cause of these accidental acts,—cannot constitute any part of its essence, or first act. This is further confirmed by the fact that, as substantial form, it cannot be potential; because it is pure act. Consequently, that potentiality must be outside its substantial nature. Therefore, it must be accidental. Hence we cannot but arrive at the conclusion that the faculties of the soul, metaphysically considered, are no part of its specific nature; but are rooted in it,—spring out of it,—are indissolubly one with it,—are its potential manifestations,—and, in consequence, are integral parts of it regarded as *a potential whole*, or considered as in its *second* potentiality to its *second* act. Add to this,

[1] '10. Anima est dignior quam forma accidentalis. Sed forma accidentalis activa est sua virtus. Ergo multo magis anima est suae potentiae.'

'Ad decimum dicendum, quod forma accidentalis quae est principium actionis, ipsamet est potentia vel virtus substantiae agentis; non autem proceditur in infinitum, ut cujuslibet virtutis sit alia virtus.' *Spiritu*, *a.* xi, 10m.

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that these faculties are faculties of the soul which is in vital act intellectual and volitive, and that, as act, the soul is intimately present with its own active potentialities,—physically one with them, since these are *itself* in its second potentiality;—the doctrine of St. Thomas on this head is completed [1].

It only remains to add a word or two, by way of application, to other instances than the soul. It is plain that, in the case of corporal substance, there is a physical distinction between the qualitative form by which the substantial form operates and the substantial essence. The active potentialities, however, though accidents, may terminate in a substantial effect, as in the instance of animal generation and, generally, in the disposing of Matter for the eduction and reception of the form; because they act in virtue of the substantial form whose instruments they are. Yet, as regards the immanent act,—the act, that is to say, considered exclusively as the actuating form of the faculty or force, the active potentiality and its act are in the same category.

As touching a passive potentiality, the doctrine is still more clear. For a passive potentiality is a pure receptivity; and a receptivity must be specifically proportioned to that which it receives,—in other words, to its act. If, therefore, it is a receptivity of specific being, it is substantial; and the form,—its first act,—is substantial. If, on the other hand, it is a receptivity of something added to the specific nature, it is accidental; and its form will be accidental.

We are now prepared to face the difficulty that has given occasion to the present examination. A material substance, subsequently in order of nature to its own complete constitution, receives certain accidental forms by means of which the substantial

[1] There are many,—Suarez, and the Thomists generally,—who maintain that St. Thomas teaches a real physical distinction between the soul and its faculties. There is one passage, indeed, (1 *d.* vii, *Q.* 1. *a.* 1, 2[m]) where the Angelic Doctor expressly uses the term, *real distinction;* but apparently as opposed to *purely logical.* As the question is psychological, its discussion would be inopportune. The arguments in favour of each opinion are very cogent; and the Thomist interpretation is ably defended in the course of some interesting articles *De Potentiis Animae,* which have appeared in the *Divus Thomas,* (a periodical published at Piacenza) during 1880. Those of our readers who may wish to examine the point for themselves, can consult the following places in the Works of St. Thomas, besides those quoted in the above pages: Verit. Q. ii, *a.* 14, *c.*, post *m.*; Pot[a]. Q. ii, *a.* 1, 6[m]; Anima, *a.* 12, *c.*; 1[ae] liv, 2, 3[m]; 2 *d.* xvii, Q. 1, *a.* 2, 6[m]; 1[ae] liv, 3 *c.*, et 2[m]; lxxix, 1, *c.*; 1-2[ae] xlix, 2, *o*; 1[ae] iii, 1, *c.* If the interpretation of the Thomists and others should prove to be the true one, it would only render the answer to the difficulty of Suarez more complete and easy.

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form is enabled to energize outside. If the substance should be actuated by these accidental forms; it must previously have possessed a real capacity for receiving them,—that is to say, a passive potentiality in their regard. Now comes the difficulty. For either that receptivity is every way identical with the substance or it is not. If the former, the *dictum* of St. Thomas is erroneous; for the act is in such case accidental, while the potentiality is substantial. If the latter, the present Thesis is erroneous; for material substance would not then be *immediately* the Material Cause of accident. The answer to the difficulty has been already given implicitly in that which has gone before. It is the material substance which immediately of itself is cause of the accident; but its capacity for receiving the accidental form is to metaphysical consideration accidental, because it is not included in the essence or definition of the Subject. If it were, it could not be a potentiality; for all substantial potentiality is fulfilled in the *first* act,—that of specific Being, which is the substantial form. But there is no physical distinction between the substance and its receptivity of the accidental form; though a metaphysical distinction most certainly there is. Consequently, the substance of itself, without intervention of really distinct accident or mode, is the Material Cause of its accidents. Yet, its receptivity is not its essence, but a property flowing from its essence; though that receptivity is an integral part of it considered as a potential whole. Nor is such an explanation gratuitous. On the contrary, it is the express teaching of St. Thomas. Relatively to this very question he has the following remarkable words: 'As to passive potentiality, it is manifest that a passive potentiality which is referrible to a substantial act is in the Category of Substance; and that which is referrible to an accidental act *is in the Category of Accident by reduction, in so far as it is a principiant and not in its character of a complete species;* because every Category is divided by potentiality and act. Hence, *man* in potentiality is in the Category of Substance; and *white* in potentiality is in the Category of Quality[1].' The latter part of the quotation merits careful consideration. St. Thomas insists upon

[1] 'De potentia vero passiva manifestum est quod potentia passiva quae est ad actum substantialem, est in genere substantiae; et quae est ad actum accidentalem, est in genere accidentis per reductionem, sicut principium, et non sicut species completa; quia unumquodque genus dividitur per potentiam et actum. Unde potentia homo est in genere substantiae, et potentia album est in genere qualitatis.' *Anima.* a. xii, c., *in m.*

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it, that the passive potentiality which is referrible to an accidental act must be somehow or other in one of the Categories of Accident; following in this, of course, the nature of the accidental act. But the entity, which is thus potentially referrible to the accident, need not be accidental *in its character of a complete species*,—i.e. in its specific entity. It is enough that it should be accidental *by reduction;* i.e. by reducing it purely and simply to its capacity of receiving the accident. Thus reduced, it must find itself in the same Category with its act; because potentiality and act dichotomize every Category. The Subject, then, of the accident need not be in the same Category with the latter; but the Subject, considered precisely as potential, (or the potentiality of the Subject, which is the formal correlative of the act), must be in the same Category with it. Hence, as St. Thomas insists, *white in potentiality* [1],—in other words, the potentiality receptive of white,—is in the Category of Quality.

It now only remains to consider the instances which Suarez has adduced for the purpose of showing that the *dictum* of St. Thomas cannot be applied either to passive potentialities which are intrinsically included in, and concomitants of, an already constituted entity, or to active potentialities,—i.e. to faculties and forces; for he admits, as has been said, its applicability to passive potentialities which, like Primordial Matter, are essentially instituted to their act. Of the instances of passive potentiality we may omit two. For the first is taken from the Divine Omnipotence, and is wholly irrelevant for two reasons. One is, that God is a transcendental Being, infinitely beyond and above all Categories; though virtually and eminently containing all their unmixed perfection in Himself. The other is, that God is one infinite and infinitely simple Act Which is His Being. Accordingly, His Nature essentially excludes all potentiality of whatever kind, metaphysical no less than physical. For similar reasons we must omit the second; for it deals with the supernatural action of God by His Grace on the human soul or its acts. Such an example lands us in the first, and has the additional disadvantage of forcing us to overstep our limits by leading us within the borders of supernatural Theology. The third instance is this: *Material substance is capable of quantity.* Most true; and itself is in the Category of Substance but, as

[1] St. Thomas has adopted this particular form of expression in order to illustrate the dichotomy: White *in potentiality*,—White *in act*.

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exclusively a receptibility of that accident, is transferred by reduction to the Category of Quantity. The fourth instance is, *quantity is capable of quality.* Again, most true. Therefore, quantity is in its own Category; but its receptivity is reduced to the Category of Quality.

The only example of an active potentiality shall be given in full. These are the words of Suarez: 'Active potentiality, compared to its action *as* action,' (i.e. entitatively), 'is constituted under the same Category. But, if by the act of this potentiality we understand the formal term of its action; it is not necessarily collocated in the same Category. This is shown by the instance, already brought forward, of gravitation; and is applicable to all locomotive potentiality' (or force), 'whether it be attractive, or expulsive, or impulsive, or the impulse itself, which many consider to be a quality; and, nevertheless, it is not ordained to produce a quality but motion or rest. And the reason can be given. For an active potentiality, as such, is not ordered to its act as the imperfect to the perfect, nor *so*, that in composition with its act it should make an entity absolutely one; but as an extrinsic cause to its effect.' In the course of this his exposition, Suarez has supplied the true answer to his own difficulty. For he admits that, if the act be considered entitatively, the active potentiality must be in the same Category with its act. All is here granted that the teaching of St. Thomas postulates. It is plain enough that the active potentiality, *qua* active, does not divide each and every Category; for there are many Categories which exclude active potentiality,—Quantity for example. But active potentiality, *qua* potentiality, takes its place with the rest. In a word, active potentiality, like every other potentiality, requires actuation; and bears a transcendental relation to its act as to its own proper form. Here the reader should be warned against a possible error only too common in this matter. Because active potentialities *are* active, their potentiality is often confounded with their activity; that is to say, they are conceived as in act. Thus, when men speak of a *force* or *power;* they often conceive of it as *acting* because it is *active.* Yet, assuredly in order of nature if not always in order of time, an active potentiality is first in pure receptivity of its act, before its actuation or information. There is likewise another danger, alluded to already, of confounding the act of such a power as immanent or entitative with the same act as transient or productive. In the latter case, the

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act in union with its Material Cause becomes efficient cause of an effect; and then, as St. Thomas and Suarez agree in teaching, the actuated faculty, as cause, and its effected act in another entity need not be in the same Category; since the substantial form is the primary agent.

§ 3.

Since corporal substance is a Material Cause of accidents; what relation does the accidental form bear to the two substantial components,—Matter and form?

We are now about to enter upon a very difficult, because very subtile, question. In the preceding Sections of this Article it has been shown, that there must be a Subject in which an accident naturally inheres and on which it essentially depends, and that in ultimate analysis substance is that Material Cause. Now, there are two facts connected with substance,—one pertaining to its entity, the other to its generation in the course of nature; both of which give occasion to certain problems touching the principle of its causality as Subject of accidents, that it will be the object of the present Section to resolve. For, first of all, material substance, (which is for the present exclusively occupying our attention), is essentially composed of two constituents,—to wit, Matter and form. Hence arises the question: Do any or all the primary, or absolute, accidents inhere immediately in the integral composite, or immediately in the Matter or in the form and, therefore, only mediately in the composite? Then, in the second place, we have seen that, in the generation of bodily substances, certain previous dispositions of the Matter are requisite for the introduction or eduction of the form. Now, these dispositions are plainly enough accidents. Are these immediately inherent in the Matter or in the quantity of the Matter independently (so to speak) of either form,—that is to say, of either the receding or of the advenient and substitutive form? Thus, for instance, there are certain alterations, or accidental changes, necessary in order that out of the *egg* the *chicken* may be hatched. Considering the question metaphysically, are those accidents proper to the egg as constituted by its provisional *ovicular* form; or to the chicken as constituted by its *pullet* form? Or, are they immediately inherent in the Matter common to both these substances? In the hypothesis, again, that certain accidents are necessary to Matter as dispositions for the reception of its form

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and that they inhere immediately in Matter and, through the medium of the Matter, in the composite; the accidental would seem to claim a certain priority over the substantial information of Matter. This gives rise to another question: Is the information of the Matter by its accident prior in order of nature to its information by the substantial form? Once more: Supposing, (though by no means admitting), that any or all of the *absolute* accidents immediately inform Matter; do they afterwards inform the substantial form by virtue of the union of the latter with the Matter, or do they altogether fail of reaching the substantial form? For instance, is the *blackness of ebony* immediately in the composite substance (the wood) itself; or is it immediately in the Matter of the wood, only mediately in the entire substance? Does it in no wise affect the substantial Form of *ebony*, by which this latter is distinguished from *gold*, *carbon*, *oxygen*, *mahogany*, etc.? The same question may be put relatively to the complex organisms of living bodies; for these organisms are mere accidents of the substance. And here we catch a glimpse of the importance attaching to a problem which, at first sight, might seem to be a mere Scholastic subtlety without a definite issue of any moment. In the next Chapter we shall be better able to appreciate its bearings.

Some, if not the greater number, of these questions will be not a little simplified by assuming, as a *Lemma*, certain truths concerning the mutual relation and order of the *absolute* accidents, which will afterwards be examined and discussed at length in their respective Categories. In passing, let it be understood that by the *absolute* or *primary* accidents are understood Quantity and Quality, as contradistinguished from the other seven Categories which are essentially relative. Now, *Quantity* is the first accident that informs material substance, and is the immediate root of all the other accidents; since it is through the medium of quantity that these latter inhere in bodies. It gives to Matter extrinsic extension and divisibility; but, like Matter, it is entirely inactive. *Qualities* are the *media* by which the substantial form operates and energizes. These immediately inhere in quantity; mediately, therefore, in the composite. Thus, for instance, the *redness of the rose*, (that is to say, that entity, whatever it may be, which causes in us the sensation of this colour), inheres immediately in the *superficies of the petals;* mediately, in the *substance of the rose*. Hence, quantity has a natural priority to quality. So much as this we learn from experience. Quantity can be con-

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ceived,—and even almost sensibly represented,—without qualities; as in the diagrams of Euclid. But it is impossible to conceive, much more to represent, quality without quantity,—a colour, for instance, without a superficies. Consequently, all qualitative accidents follow in the wake of quantity, and inform material substance precisely in the same way as quantity; for it is through the medium of this latter, (be it remembered), that they inform substance at all. Wherefore, the investigation for the most part may be restricted to quantity which will stand proxy for the rest.

Let us commence, then, with the easiest question which will serve for introduction to the others: In any single instance of material substance, is accidental, prior in order of time to substantial, information? in other words: Is Matter in any given case informed by any accident physically and in time, before it has been informed by its substantial form? At the first cursory glance it might seem as though Primordial Matter must be first quantified, in order to become proximately capable of separation; then actually separated by various qualities in each portion, so as to render it at once fit for the reception of different primitive forms that reduce it in its separated parts to the various specific natures of the original elements, whatever and how many soever these may have been. Nevertheless, such an opinion is quite untenable; and has not found one solitary patron, so far as the writer knows, in any Doctor of the School. Wherefore,

PROPOSITION CLXIII.

In the physical order, Primordial Matter, the primary substantial forms, with the quantity and qualities connatural with each composite substance, were concreated in actual union; and thus constituted the elementary bodies, out of the various combinations of which all other material substances have been formed.

THE PRESENT PROPOSITION IS THUS DECLARED.

It is metaphysically impossible that Primordial Matter should have been created by itself, so as to exist for a moment in a state of isolation. The reason is readily seen in its very nature. For Matter is the most incomplete and lowest of entities; so much so, that it has been described by the Doctors of the School as being *next to nothing*. Further, it is, (as has been seen,) a pure subjective potentiality, or receptivity. Its actuation is

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substantial information. Therefore, it is impossible that it should exist, apart from some form. Hence, it is said to co-exist rather than to exist. Such is the teaching of the Master of the Sentences, of St. Thomas, of St. Bonaventure, and of the rest of the Scholastics; with the exception of Scotus, Suarez, and a few others. These latter maintain, that the existence of Primordial Matter by itself, without any form, is not a metaphysical impossibility; and therefore, that it is within the reach of the Divine Omnipotence. The examination of this opinion will occupy us later. Meanwhile, all are agreed that, as a fact, Primordial Matter was concreated in the beginning with its substantial and accidental forms; so that the visible and material works of creation were limited to certain simple bodies out of which, by various combinations, by progressive corruptions and generations, all the complex varieties of nature were gradually evolved. The question touching the number and specific nature of these elementary substances does not concern us; for its resolution belongs to physical science and must be determined, (if ever determined), by experiment, analysis, observation. *A priori* it is more probable that there were two, at least, of these elementary bodies; because otherwise it would be difficult to conceive upon what basis any after combinations could proceed. Certainly, it is easier to realize the possibility of such combinations, in harmony with the teaching of a sound philosophy, with the aid of a plurality of elements, than in the hypothesis of there being one only. Whether it should eventually be made evident that these elements are reducible to *hydrogen* and *calcium*, or to these in company with *sodium*, *magnesium*, *carbon*, and so on, is a speculation most interesting, indeed, to the metaphysician; but its determination must be left to the laboratory. It only remains to add, that all the other substantial forms were gradually evolved out of the potentiality of the Matter in accordance with the dispositions of the latter, in a way which will be explained in the next Chapter; and that all the accidental forms, not actually present in the primordial elements, were similarly educed out of the potentiality of those composite substances which respectively offered themselves as the subjects of these forms.

We now approach the metaphysical problems. The first, because nearest to the physical conclusion of the preceding Thesis, is this:

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How is quantity an accident of bodies? Is it immediately inherent in the Matter, or in the integral composite? Then, in the second place, does it anywise inhere in the substantial form?

PROPOSITION CLXIV.

Primordial Matter cannot solely or exclusively be the Material Cause of quantity, which is no other than the complete substance.

I. THE FIRST MEMBER of the present Proposition, wherein it is contended that *Primordial Matter cannot solely or exclusively be the Material Cause of quantity*, is proved by the following arguments. i. Primordial Matter has not sufficient entity of itself to become, alone, the Subject of quantity or of any other accident, without previous information by some substantial form. For that which in itself is a purely passive potentiality, awaiting its first act in its own Category, and capable of actuation and of existence only by virtue of such substantial act, cannot be a competent Material Cause of a form belonging to another Category, previous to its proper information by its own substantial form. *The above argument is thus confirmed.* In order that Primordial Matter may become the Material Cause of any accident, it must either exist previously to, or simultaneously with, the accidental actuation; because a component must exist, if it is to enter into real composition. Consequently, it must be possible for Primordial Matter to exist before, or in, the act of composition with quantity; and this, antecedently to its substantial information. But neither the one nor the other is possible. It cannot pre-exist; for then it would exist of itself. This, however, as we have already seen, it cannot do; since it postulates actuation. It cannot co-exist; for then its being would be accidental, because due to an accidental form. ii. It is absonous to imagine that Primordial Matter could receive its first information from an accidental form; for of its very nature it primarily postulates information in its own Category. It is a substantial potentiality; and on that account its first act must be substantial. If it were first informed by an accidental form, it would primarily be an accidental component; and only a substantial component, if at all, by virtue of a previous accidental composition. iii. Substance is naturally prior to accident; since accident is for the sake of substance, not

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substance for the sake of accident. Moreover, accident is indebted to substance for its being and depends on substance for its sustentation. But, if Matter alone could be the subject of accident, the order would be inversed. Substance would depend on accident; since the intervention of quantity would be necessary to the union of Primordial Matter with its substantial form. iv. Primordial Matter is purely passive; it cannot, consequently, become of itself a principiant of emanation. But accidental forms emanate from their Subject; for, not being substances, they have no absolute existence. Hence, they are rather that *by which a thing is* than themselves *that which is*. But Primordial Matter cannot actuate; because it is a mere receptivity. v. Although Primordial Matter has a partial entity of its own; that entity is not sufficient to support any accidental form, prior to its own substantial information. For accident in its essential nature requires the previous information of its Subject; forasmuch as it is *Being of Being*. Hence, with the partial exception of quantity, (for quantity is not always an exception to the rule), accidents differ with the differences of the substantial form. At least, such is the case with the specific accidents. Let us take an instance. Figure or shape is a quality of quantity. Now, the figure of a *man* differs from that of a *bird*. The shape of a *bird* differs from that of a *horse*; while the shapes of all three differ from the shape of a *plant*. Let it not be said, that these are instances of quality, not of quantity; and that it is this latter which is the subject of the present Proposition. For, seeing that all qualities immediately inhere in quantity, one is justified in arguing from the former to the latter; in such wise that, if Matter of itself is the Material Cause of quantity, it must likewise be the Material Cause of those qualities which inhere in and accompany it. Moreover, the substantial form can only reach the qualitative accidents through quantity; since it is only through the medium of quantity that the qualities inhere in the substance of which the said form is the act. But what foundation is it possible to find in Primordial Matter, first of all, for the emanation of these accidents, and then, for their specific diversity; since Matter of itself is wholly passive, is absolutely indifferent to all forms, and has no even germinal principle of selection? vi. In the hypothesis that Primordial Matter alone is the Material Cause of quantity, the substantial form would actuate Matter through the medium of its concomitant

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accidental form. Therefore, the accidental form would be a more intimate act of Matter than the substantial form, and would be indebted for its existence to the former rather than to the latter; that is to say, it would exist as substance, (for it can exist in no other way), by accidental actuation. vii. Matter by its *first* act becomes complete substance,—that is, an entity existing in itself absolutely. But is it reasonable to imagine that this could be effected by an accidental union? No being can go beyond its own native capacity unaided. But let us suppose, for the sake of argument, that quantity could actuate Primordial Matter, antecedently in order of nature to the latter's substantial information; in such case, as has been said, it would be the first act of Matter, making the latter to be actually existent. One is tempted to inquire, under which of the Categories this new entity is to be ranged. It must be either substance or accident. But it cannot be accident; since it is supposed to exist or rather to co-exist in itself, without inhesion or appetite for inhesion in another. Besides, one of its components is substantial. Neither, on the other hand, can it be substance; for the reason that it has received its actuation and specific nature, (because it is its first act), from an accidental form. viii. If quantity could inform Primordial Matter antecedently to the latter's substantial information; it would be immutable. For Primordial Matter is immutable; and, in the given hypothesis, it is entitatively independent of the substantial form. In bodily substance, mutability is the exclusive property (if one may use the term) of the composite. Both Matter and form in themselves are changeless. But, according to the opinion at present under censure, quantity is not the immediate accident of the complete composite, but of Primordial Matter separately. Therefore, it cannot but be immutable. It might possibly be urged against this conclusion, that quantity in itself is mutable. But this is impossible. For quantity neither admits contraries nor more and less in its own Category; for great and small, as Aristotle points out[1], though passions of quantity, are in the Category of Relation. Moreover, it is not in itself active. Therefore, it has no more capacity for change than Primordial Matter. Accordingly, in the said hypothesis, it would be immutable. Some have ap-

[1] Ἔτι τῷ ποσῷ οὐδέν ἐστιν ἐναντίον. . . . εἰ μὴ ἄρα τὸ πολὺ τῷ ὀλίγῳ φαίη τις εἶναι ἐναντίον ἢ τὸ μέγα τῷ μικρῷ· τούτων δὲ οὐδέν ἐστι ποσὸν ἀλλὰ τῶν πρός τι. *Categ. c. 6. v. m.*

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parently added another argument, (for Suarez alleges and refutes it); viz. that, if Primordial Matter were of itself the Material Cause of quantity, this latter would be incorruptible. Suarez admits the *Consequence*; but denies that it affects the question. He is right. For no accidental form can be, properly speaking, corruptible. As St. Thomas says, 'No accident is, properly speaking, either made or corrupted. But it is said to be made or corrupted, accordingly as the Subject begins or ceases to be in act with regard to that accident[1].' ix. The principal foundation of the contrary opinion is traceable to the fact, that quantity is seen to remain apparently the same under the two terms of substantial transformations. But there could not possibly be such permanence, if quantity informed either the composite or substantial form; because, in accordance with its accidental nature, it would change whenever these change. But it is easy to see that this supposed foundation is of little or no weight. In order to evince as much, it will be necessary to anticipate somewhat of the doctrine touching the substantial forms of material substance, which will be explained *ex professo* in the next Chapter. There is an exquisitely perfect gradation in substantial forms; and the nobler virtually contain the inferior, with a specific addition of efficacy. Thus, the substantial form of corporeity is the lowest and first. It is common to all material substances. Consequently, it is never alone, never explicit; but is virtually contained in all other bodily forms. The substantial form of a *plant*, for example, virtually contains the form of corporeity; and adds the more specific form of vegetative life in which the former is included. The substantial form of an *animal* virtually includes corporeity and vegetative life; but contains, over and above, a sensitive life of its own. Now, there are accidental properties which correspond with each of these forms, or acts, of Matter. Hence, two things: First, that the properties of an inferior form may remain specifically the same, as generic properties of the superior form or composite; secondly, that the inferior form, virtually contained in the superior, together with its specific properties may be metaphysically considered as constituting part of the Matter

[1] 'Quia ejus est fieri vel corrumpi, cujus est esse; ideo proprie loquendo nullum accidens neque fit neque corrumpitur; sed dicitur fieri vel corrumpi, secundum quod subjectum incipit vel desinit esse in actu secundum illud accidens.' 1-2^{æ} cx, 2, 3^{m}.

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subjected to the superior form. Let an illustration be taken from the teaching of St. Thomas. 'In human generation,' he replies, (in answer to an objection, urged against a Proposition he was then engaged in defending, viz. that the union of the soul with the body is immediate), 'there are many generations and corruptions following one another in succession. For, on the advent of the more perfect form, the less perfect gives way. Accordingly, although in the embryo there is at first the vegetative life only; when the embryo has attained to greater perfection, the imperfect form is banished and a more perfect one, which is at once vegetative and sensitive, takes its place. This eventually receding, the last and most complete form, which is a rational soul, succeeds to it[1].' It follows from this virtual inclusion of the vegetative and sensitive forms of life in the human soul, that the powers of nutrition and growth, (which are properties of vegetative life), and sensitive faculties with locomotive power, (which are supposed to belong especially to animal life), remain in the living man. But in him they remain as generic properties. Hence, they may be regarded as contributing to his material part, (for genus is taken from the Matter), to be differentiated by the specific form and actuated afresh by a new act of being; although the same perfect form,—that is to say in the instance given, the human soul,—causes in the perfected composite the respective properties appertaining to those inferior forms which it virtually includes in itself. In this way, each substantial form of material substance virtually contains within itself corporeity and, as a consequence, introduces into Matter the property of corporeity,—that is to say, quantity; which, therefore, (in accordance with the explanation just given), may be regarded as a necessary disposition of the Matter for the introduction of the specific form, even though this latter brings along with it into the Matter these so-called dispositions. Now, these properties, (for there are others besides quantity to which the present observations apply), remain *specifically* the same, even under substantial transformations within the limits of the same

[1] 'Relinquitur ergo dicendum, quod in generatione hominis vel animalis sunt multae generationes et corruptiones sibi invicem succedentes. Adveniente enim perfectiori forma, deficit imperfectior. Et sic cum in embryone primo sit anima vegetativa tantum; cum perventum fuerit ad majorem perfectionem, tollitur forma imperfecta, et succedit forma perfectior, quae est anima vegetativa et sensitiva simul; et ultimo cedente, succedit ultima forma completissima, quae est anima rationalis.' *Spiritu.* a. iii, 13[m].

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genus; though they are not *numerically* the same under both forms. Therefore, the Material Cause of quantity is *body*, which is the lowest but universal material composite; the nearest approach to which are elements, or simple bodies. Thus much for the present; the problem awaits further discussion.

II. THE SECOND MEMBER of the Proposition, in which it is asserted that *the complete substantial composite is the Material Cause of quantity*, follows as a corollary from the former Member. For no one has maintained, that the substantial form of itself is the Material Cause of quantity. If, therefore, Matter is not the Subject; the complete substance must be.

DIFFICULTIES.

The objections that have been brought against this Thesis are of two kinds. Some consist of arguments levelled against the proofs by which it has been established; while others directly challenge its truth. They are to be found, one and all in the *Metaphysics* of Suarez[1]. We shall follow the order indicated; and commence with *those which impugn the validity of the proofs.*

I. It is not true that Primordial Matter has not enough of entity to be capable by itself alone of sustaining an accidental form. For Primordial Matter 'has its own proper entity which, though in the Category of Substance it is incomplete, nevertheless, in comparison with accident is simply entity and a partial subsistence. And moreover, though it depends on the substantial form according to one kind of causality in which Matter may be said to be united to the substantial, antecedently in order of nature to its union with the accidental, Form; notwithstanding, this does not hinder Matter from being capable of sustaining accidents and, after another fashion and in another kind of causality, of being united to them antecedently in order of nature.'

ANSWER. The *Antecedent* is denied. Now, as to the proof: It is willingly granted, that Primordial Matter has a certain most imperfect entity of its own; which cannot however be regarded, in comparison with Accident, as simple entity. For, apart from its act, it is a purely passive potentiality which is absorbed in, or rather fulfilled by, its substantial act. Neither can it be regarded

[1] *Disp. XIV*, § 3, *nn.* 44-60.

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as a partial subsistence, properly speaking, apart from its act; for it simply exists and subsists by that act. Apart from its actuating form, it neither subsists nor exists. Further: As a mere receptivity, it has a transcendental relation to a substantial form only; and its capacity is determined within its own Category alone. Lastly: Whatever is understood by these different kinds of causality; there is no conceivable way in which Matter can be united to accident, antecedently to its substantial actuation. For, in order to become the Subject of an accident, it must first exist; and it can exist only in union with some substantial form.

THE OBJECTION IS URGED by the following argument *à pari*. 'The substantial composite depends on its natural dispositions. For, when these are removed, it is corrupted or dissolved. Nevertheless, this does not hinder the same composite from being the Material Cause of other accidents. Nay, what is more, the same composite is the Material Cause of those very dispositions; although, in another way, it depends upon them. What wonder, then, that Matter, though it depend on the form, should be capable of being the Material Cause of quantity.' This is what was meant in the preceding argument by a different kind or order of causality.

ANSWER. There is no parity between the two cases. For, first of all, the composite by itself is an actual, existing entity; Primordial Matter is not by itself an actual, existing entity. Hence, the former is capable of being the Subject of an accident; the latter is not. Secondly, the substantial composite depends on its natural dispositions *as a condition* rather than a cause. It is, on the other hand, the Subject of other accidents, including these very dispositions; therefore, as a cause and not a condition. Indeed, the argument drawn from such a comparison may be retorted. For, as the composite is conditionally dependent on the previous dispositions, so that, wanting them, it could not be generated and, consequently, could not become Subject of any accident; in a similar way, Primordial Matter is *à fortiori* so dependent on its substantial form, that without the latter it could not exist and, consequently, could not become the Subject of any accident.

ONCE AGAIN THE OBJECTION IS URGED BY A SIMILAR ARGUMENT. 'Though Matter depends on form, it can nevertheless be the cause of that very same form. Therefore, although it depends on the form, it is capable of being the Material Cause of quantity.

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The *Consequence* is plain. For there seems to be a greater repugnance between these two relations of dependence and causality in regard of one and the same, than in regard of different, entities.'

ANSWER. The parity is again denied. For the dependence of Matter on the substantial form is its nature, as being a purely passive potentiality; and its proper causality essentially arises out of that dependence. Because it is a pure receptivity, it depends entitatively on its act; and because it postulates actuation, it must be Material Cause of its own act or form. The ultimate reason is, that Matter and form are two incomplete but mutually completing entities in the same Category; and their relation to each other is essential. On the contrary, accident (say, quantity) is perfect in its own Category; though it is of its nature, as accident, to postulate a Subject of inhesion. But the potentiality of Matter has no such essential relation to accident; and not having an essential relation, is incapable, by reason of its exclusive potentiality, of imbibing it. The confirmation of the *Consequence* must, therefore, be categorically denied. For dependence and causality are *essential* to two mutually completive entities in the same Category; which cannot be affirmed of a complete substance and an accident.

II. 'We grant that Matter primarily looks to the substantial form and that, consequently, in the order of intention or purpose, it is first joined to that form; but not in order of execution. On the contrary, in this latter order it is naturally first united to the accidental form as a means towards, or disposition for, the substantial form. For it often happens that a potentiality which is primarily ordained to a certain act, in execution first receives another act by which it is disposed for the former.'

ANSWER. It is not necessary to determine whether this distinction between the order of intention and that of execution is of universal application to the things of nature; and for this reason. In the instance immediately before us, it is a question touching a pure receptivity whose *primary* act must be its *first*; for it must *be*, before it can become a Subject. But it cannot naturally be actuated and become existent by a secondary act outside its own Category.

III. 'It is not universally necessary that the accidental should

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be compared to the substantial form as the second act to the first. For quantity does not seem to be comparable after this manner, but only as a natural disposition of the substance by reason of the Matter. Similarly, extrinsic accidents, which do not emanate from the form and are not received in it, are not compared to it as second acts to the first.'

ANSWER. It is universally necessary that the accidental form, *as act*, should be compared to the substantial form, *as act*, after the manner of a second act to the first. The words, *as act*, have been prominently set before the eyes of the reader for the purpose of putting him on his guard against a latent sophism. Plainly enough, the comparison is not between the two forms as such, if it is to be of any elenchtic value; but between the two forms as acts of a substantial entity. The appeal to quantity looks very much like begging the question. Touching the extrinsic accidents, the same virtual distinction holds good *servatis servandis*; and, consequently, the same relation to the substantial form of second to first act as in the instance of the absolute accidents. Take the instance of *clothes*, or *garments*. In so far as they are accidents of their wearer, (and it is only thus that they can be conceived as accidents at all), do they not presuppose the existence of that wearer? For if there were no body; to what purpose clothes or raiment? So again, take the accident of place. There must first be a bodily substance duly constituted, before you can predicate place; since a place for nothing is no place at all.

III. 'Even supposing that quantity accompanies the activity of the substantial form,' (this would seem to be the only intelligible rendering of the words, *quantitatem consequi active formam substantialem*, for quantity itself has no activity), 'the *Consequence* is denied; because quantity can flow from the form into the Matter, and be preserved in it by a succession of forms.'

ANSWER. If quantity flows from the form into the Matter, it is clear that the Matter must be actuated by the form; for the existence of the form is synchronous with its actuation of the Matter. Besides, it could not impart quantity to the Matter, unless it were in union with that Matter. Therefore, quantity would immediately inform the composite.

IV. *The following objection is directed against the sixth argument*

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in proof. There are two senses in which we may understand Matter to receive the substantial form through the medium of quantity; in the first place, *through the medium of quantity*, only as a disposition or necessary condition. It is in this way that it can be granted; and the reasons and inconveniences urged in the proof do not tell against this sense. In the second place, *through the medium of quantity* may mean, as a potentiality proximately receptive of the substantial form; and in such sense the *Consequence* is justly condemned.

ANSWER. The above distinction does not weaken the strength of the proof; but, on the contrary, seems to establish it more clearly. For how can a pure receptivity be disposed, through the medium of an entity extraneous to its own nature, save by actuation? But, if it were thus disposed by actuation, this would be its first act; and the existing Subject, thus accidentally composed, would subsequently in order of nature receive the substantial form. Consequently, the former would necessarily resolve itself into the latter hypothesis. Yet no form, accidental or other, can dispose its Subject save by actuation; indeed, form is here identical with act.

It now remains that we should examine the arguments which directly impugn the truth of the doctrine maintained in the Thesis.

V. 'Primordial Matter by itself is a sufficient' (material) 'cause of natural generation, by virtue of the action of a natural agent. On the other hand, it is of itself indifferent to any whatsoever form that can be introduced by generation. Hence it follows, that quantity must be coeval with Matter; and not exchange or in any way acquire it by generation. The *Consequence* is thus proved. In order that Matter may be capable of receiving the action of a bodily agent, it must of necessity be preconceived as itself bodily and extended. For a bodily agent prerequires that its Subject should be extended and corporal. Nor is it enough that, during the whole time of alteration previous to generation, the Subject of such alteration should be quantified; but it is necessary that the same should happen in the instant itself of generation, in which there is a new action proceeding in like manner from a corporal and extended agent. Therefore, the Subject which is submitted to such action is also supposed to be corporal and quantified. It does not, therefore, become quantified by that action either immediately or mediately. For a condition, necessary on the part of

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the Subject in order that it may be capable of doing duty as a Subject, cannot be fulfilled by the agent that necessarily supposes the Subject already fit to be acted upon.' So far Suarez.

ANSWER. The first Member of the *Antecedent* must be categorically denied. In the first place, it is destructive of the *Conclusion*. For Matter by itself is not Matter quantified. But, in the next place, (*pace tanti Doctoris*), it is erroneous. True it is, that Primordial Matter is the *immediate* Subject of generation, but it is not the sufficient Subject; for it must previously, by convenient dispositions, be proportioned to the form that it is about to receive. This is the teaching of St. Thomas. 'In order,' he writes, 'that any generation may be called natural, it is necessary that it should be effected by a natural agent, and of natural Matter proportioned to it. If either of these two is wanting, the generation cannot be called natural[1].' Hence, one reason for the necessary creation of elements in the beginning. Primordial Matter is undoubtedly the only Subject that remains *on all sides* immutable in a substantial transformation. But it never is,—it never can be,—left by itself. As a fact, in generation the antecedent form together with its accidents remains, till the supervenient form with *its* accidents is ready to take its place. It is the old fact of motion and rest over again. Then, secondly, quantity and in many instances some of the qualities of the receding form remain specifically the same; though they receive a new actuation and, consequently, a new existence. Again: The second Member of the *Antecedent* needs a distinction. *That Primordial Matter*, in the abstract and antecedently to all information, *is indifferently receptive of any whatsoever substantial form*,—granted; *that Matter*, as proximately proportioned to this or that natural generation, *is indifferently receptive of any whatsoever substantial form*,—denied. The *Consequence* deduced must likewise be distinguished. *That quantity must be coeval with Matter*, as co-existing in nature under each and all of corporal forms, (forasmuch as quantity is the property of Corporeity which is the primary substantial form included in each and all of the other forms),—in a word, that quantity must be *physically* coeval with Matter,—granted; *is co-*

[1] 'Ad hoc enim quod generatio aliqua naturalis dicatur, oportet quod fiat ab agente naturaliter, et ex materia naturali ad hoc proportionata. Quodcumque autem horum defuerit, non potest dici generatio naturalis.' 3 *d.* iii, *Q.* 2, *a.* 2, *c.*

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eval with Matter, i.e. informs Matter antecedently in order of nature to the actuation of the same by its substantial form,—in a word, must be *metaphysically* coeval with Matter,—denied. In like manner, it must be denied, that *quantity is not changed or acquired by generation.* The argument in confirmation of the *Consequence*, (viz. *In order that Matter may be capable of receiving the action of a bodily agent, it must necessarily be preconceived as itself bodily and extended*), is willingly granted as an independent Proposition; but not in its character of a proof. As such, it exhibits an *ignoratio elenchi.* Nothing can be more certain than the fact that in generation Matter must be quantified, in order that the natural agent may be able to introduce the form into, or rather educe the form out of, it. Not only must there be quantity; but there must be qualities, for the Matter must be disposed. But this in no wise proves that Matter alone without any substantial form must be quantified; for as a fact, Matter, which is the proximate Subject of generation, is under either one or other of the substantial forms from the beginning to the end of the generating motion.

The explanation of this answer will satisfy for the additional arguments by which Suarez with great elaboration defends his position. Wherefore: In natural generation the efficient cause acts upon a complete substantial composite, informed with its own quantity and its own qualities. Some of these qualities are generic; others, specific. Take, for an example, a *palm-tree.* Its powers of nutrition and growth are generic; the increase of its stem by internal growth without distinction of pith, wood, and bark,—the parallel veins in its leaf,—the monocotyledonous seed,—are specific; because they are properties of the class of *endogens* to which the palm belongs. The former belong to it as a *vegetable*; the latter are its properties as an *endogen.* Now, if the generative change takes place within the limits of the same species,—as, for instance, in plants and for the most part in animals,—the generic and specific properties do not pass away in every sense of the word, for the reason that they are in harmony with the new substantial form; although they do not remain, (as has been already noticed), *numerically* the same, because they take their reckoning from the Subject that they inform. In the effected change, they are no longer the property of the parent but of the offspring. In the case of generations, (using the term generically), which overstep

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the limits of the species,—as in the generation of *water* from *oxygen* and *hydrogen*, in that of *steam* from *water*,—the specific qualities are expelled from the old substance or substances by the presence of other accidental forms which are incompatible with their predecessors and cognate with the new supervening form. The same may be said of progressive and provisional transformations which, though *completed* within the specific limits, nevertheless seem to transgress those limits (metaphysically speaking) in the *process*. Thus, *a separated seed of a plant* can scarcely be called a *living* thing; though proximately potential of life. Similarly, it would be paradoxical to affirm that a *caterpillar* was specifically the same as a *butterfly*, or an *egg* specifically the same as a *chicken*. The principal difference between these progressive, provisional, transformations and those previously mentioned, consists in this; that the one original cause of the former directs, as it were, the entire complex generative process from first to last and gives to the Material Cause a proclivity for its own specific form,—together with the specific qualities accompanying that form,—which is only satisfied in the final transformation. Hence, all such generative processes are circular; ending where they began. Now, in the generative act the efficient cause impregnates the subjected Matter, as yet under the dominion of another form, by means of its own specific qualities. By this impregnation certain qualities are introduced, which dispose that portion of Matter for the reception of a new form and indispose it for the retention of the old form. Thus an alteration is initiated in the old composite; but the process is gradual. Throughout, those qualities retain the virtue they originally received from the substantial form of the generating agent by whose commission they act; so that, if, in the course of the various transformations, qualities are replaced by those of a higher order, these latter virtually include the former and receive by transmission the same assimilating virtue that gradually organizes the Matter, under its various transitory forms, for receiving the final and perfect transformation. With regard to quantity, which is perfectly passive, it will at once appear that there is no transition; because quantity is the generic property of all bodies, but receives a new act of being with the advent of each new substantial form.

One more observation is necessary to complete the explanation. As soon as the substantial form actuates the Matter and expels

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its predecessor, it brings in its train its own specific qualities which simultaneously inform the Material Cause. If the substantial transformation is within the limits of the same species; the specific accidents merely change owners and acquire a new title to existence. Thus, in generation, Matter from the beginning to the end is never for one moment destitute of some substantial form; consequently, never of quantity. Nor of qualities corresponding with each successive form. Further: Generation is always preceded by alteration; that is to say, accidental changes, accompanying the generative action of the efficient cause, prepare the way for the substantial change and dispose the Matter for its union with the substantial form. Generation would be as impossible without the presence of qualities as without the presence of quantity,—nay, more so; for the substantial form of the agent can only act by the medium of those its specific qualities which it communicates to the subjected Matter. Lastly: Touching all those accidents which are necessary for the new substantial composite or for the proximate dispositive assimilation of Matter to its act, it may be well to repeat that the form, synchronously with its actuation of the Matter, introduces both; though, of course, in order of nature such introduction is conceived as prior to the substantial constitution of the composite, so far as the last-named class of accidents is concerned.

VI. 'It is only reasonable, since Matter has a true and real essence of its own, though partial, that it should have some kind of property.'

ANSWER. It seems contrary to reason, that an entity, which is no entity previous to its substantial information, should possess any property at all; since there is no property that does not flow from a constituted essence, and a constituted essence presupposes in material entities the union of Matter with its substantial form.

VII. The argument upon which Suarez principally relies is placed last in our series. It is this. In *man* the entire composite cannot be the Material Cause of quantity. For the human soul is simple and spiritual; therefore, it is impossible that it should be informed by quantity. You cannot quantify *consciousness* or *will*. The very idea is preposterous. But, if the soul cannot be a Subject of quantity; neither can the entire composite of which the

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soul is the principal component. It follows, therefore, that in man the Matter or material body is the Material Cause of accidents; not the integral substance. But if in man; it is more probable that the same holds good in the instance of all other bodily substances.

ANSWER. The intrinsic importance of the question, no less than the undoubted gravity of the objection, seems to require that this difficulty should be treated with greater care and in a more prominent way than the others. Wherefore,

PROPOSITION CLXV.

Though the soul, as such, in its own essential nature is incapable of being informed by quantity; yet, as form or act of the body,—that is to say, as united with the body,—it is both virtually, and in part potentially, dependent upon quantity and informed by it.

LEMMA.

i. The human soul is an incomplete substance; because it is created to inform the body and, by union with it, to constitute a complete substance. One plain sign of its incompleteness is, that it possesses certain faculties which it cannot naturally exercise save in conjunction with the body. ii. The human soul is a spiritual substance in its essence; consequently, it is a simple form without parts or possibility of parts. Therefore, it is an independent, though partial, subsistence; that is to say, it is capable of subsisting by itself, though that subsistence is incomplete so long as the soul remains in a state of separation from its body. Hence, *speaking according to the strict language of philosophy* a separated soul cannot be called a *person*. It is *it*; not *he*[1]. iii. The human soul has many faculties which, though not its essence, are nevertheless properties flowing from its essence. iv. These faculties are of two classes, to wit, the superior and the inferior. The superior

[1] 'Anima est pars humanae speciei; et ideo, licet sit separata, quia tamen retinet naturam unibilitatis, non potest dici substantia individua, quae est hypostasis vel substantia prima; sicut nec manus nec quaecumque alia partium hominis. Et sic non competit ei neque definitio personae neque nomen.' 1ae xxix, 1, 5m.

'Non quaelibet persona particularis est hypostasis, vel persona, sed quae habet completam naturam speciei. Unde manus vel pes non potest dici hypostasis, vel persona; et similiter nec anima, cum sit pars speciei humanae.' 1ae lxxv, 4, 2m.

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are purely spiritual and *in their nature* are independent of the body. The lower faculties are vegetative and sensitive. These are *in their nature and exercise* dependent on the union of soul with body. By *nature* is here meant the intrinsic principle of tendency towards the constituted end of any given entity. These preliminary truths are borrowed from psychology.

I. THE FIRST MEMBER of this Proposition, in which it is contended that *the human soul, as such, in its own essential nature is incapable of quantitative information*, is thus declared. That which is incapable of extrinsic extension, is incapable of being informed by quantity. But the human soul by reason of its spirituality is incapable of extrinsic extension. Therefore, &c. The *Major* is evident; for extrinsic extension is the natural result of quantity, as will be seen later on. By *extrinsic extension* is meant *the position of part outside part in space.* The *Minor* is thus proved. That which is incapable of intrinsic, is incapable of extrinsic, extension. But the human soul by reason of its spirituality is incapable of intrinsic extension. The *Major* is self-evident, and only needs an explanation of the term *intrinsic extension.* Intrinsic extension, then, is *the entitative existence of part outside of* (or better, *distinct from*) *part.* A body, for instance, might be supernaturally reduced to a mathematical point. In such case it would have no extrinsic extension. But it would still have its entitative composition of part distinct from part, which is essential to material substance,—the result of corporeity, or its primary substantive form. Extrinsic extension, on the other hand, gives position in space, (accompanied by mutual impenetrability), to the entitative parts; and is the result of quantity. The *Minor* of the last syllogism is thus proved. A spiritual substance is simple and, as such, incapable of entitative parts. Therefore, it is impossible that it should have part distinct from part.

II. THE SECOND MEMBER, which affirms that *the human soul as form or act of the body is* VIRTUALLY *dependent on, and informed by, quantity*, is thus declared. The human soul is perfected in some way by the material body; so that, while separated from it, it is in an imperfect and non-natural state. Hence, it is due to its essential nature that it should not be permanently separated from its body; as St. Thomas teaches[1]. Consequently, though simple

[1] 'Necesse est autem hoc quod est animam a corpore separatam esse, per accidens esse et contra naturam, si hoc per se et naturaliter inest animae ut corpori uniatur. Non igitur anima erit in perpetuum a corpore separata.' *Opusc. I, c°* 151, *n.* 3°.

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and spiritual in its essential nature, it is united with the body substantially. It must, therefore, in some way or other be united to the quantity and qualities which inform that body. Now, according to the teaching of the Angelic Doctor, the respective substantial forms of vegetative and animal life successively inform the embryo, previous to its final information by the human soul; and, further, those forms are educed from the potentiality of the Matter by the instrumental agency of the sperm cells[1]. As there cannot be two substantial forms in one and the same substance, the animal supplants the vegetative life; but, while supplanting, supplies its place. In other words, the animal virtually contains within itself the vegetative form, doing all that the former could do and much more besides. Finally: The human soul, as form or act of the body, supplies the place of both vegetative and animal life; doing their work, only more perfectly. Hence, the human soul, as substantial form of the body, virtually contains within itself the forms of corporeity, of vegetative and animal life. Further: Inasmuch as Primordial Matter is its Material Cause or Subject; the soul by a new entitative act gives to Matter corporeity and along with it its property,—that is to say, quantity. As virtually the vegetative form, it introduces by the same act into the Matter nutritive and accretive powers and an organism suitable to each; as virtually the animal form, it introduces or reconstitutes (if you will) by the same act, a sensitive organism and sensitive powers. Not that these were not there before the creation of the human soul; but in that final and completive transformation, the actuating soul causes their existence in the Matter under itself by a new entitative act. As, then, the quantity, nutritive and accretive forces, under the animal form are *numerically* distinct from those which had previously existed under the vegetative form; so, the quantity, vegetative and sensitive powers, under the information of the human soul are *numerically* distinct from those that existed under the animal form. Seeing, therefore, that the vegetative and—at least in the lower class of animals—the animal form are both of them virtually or potentially informable and *de facto* informed by quantity; and since the human soul, as form or act of the body, is virtually both vegetative and animal form to that body: It follows that it should be *virtually* capable

[1] 1ª° cxviii, 1, *c.*; 2 *d.* xviii, *Q.* 2, *a.* 3, *o*, *praesertim ad fi.*; *Cg. L. II*, *c°* 89, *v. m.*; *Po*ª *Q.* iii, *a.* 11, *o.* Cf. *Cg. L. II*, *c°* 86.

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of quantitative information, in so far forth as it is act of the body. Again: Such a virtual capacity is conformable to right reason. For, first of all, the human soul is immediately united to Matter, as to its Material Cause. Yet actuated Matter, apart from quantity, has (as we have already seen) entitative, or intrinsic, extension; why should it be more difficult, then, that it should be also immediately united to quantity in its character of form and as virtually equivalent to the vegetative and animal forms? Is it not rather a presumption in favour of such union, that the soul is the immediate act of organized Matter? For the difficulty is about the parts; but it is actuated Matter which really contains the parts, while quantity only puts them, so to say, into position. Secondly, the human soul is limited by quantity after a certain order. For quantity gives to it a determined presence in space, according to which it is definitely *here* or *there*.

III. THE THIRD MEMBER, in which it is further stated that *the human soul, as form or act of the body, is* POTENTIALLY *dependent on and informed by quantity,* is declared as follows. (i) The soul has vegetative powers by which it nourishes the body and causes it to grow. Now, such powers must be in some sort proportioned to their act. But the acts are material and informed by quantity. Therefore, the powers themselves are in some way or other subject to quantity. Again: These powers are limited to certain organs, and can only energize in and through them. They are, as a consequence, limited, localized, by quantity. The soul, on the contrary, is wholly and entirely in each and every part of the body. Once more: How, in particular, can the soul be cause of nutrition, assimilation, of material accidents, such as *colour*, *shape*, &c., if the faculty by which it causes these things were wholly exempt from quantification? (ii) The soul has sensitive faculties whose acts are in some sort quantitative; for, as representative even, they are purely material. The sensations of *colour*, of *taste*, of *hardness*, *softness*, of *sounds*, of *pain*, are all illustrative of this truth. There is not one of them that does not necessarily presuppose and sensilely include quantity. Moreover, these animal powers—like those of vegetative life—are restricted to certain definite organs; so that the soul cannot *see with the nose* or *hear with the feet*. So thoroughly is each sense dependent on its appropriate organ that, if there be any serious lesion of or material impediment in the latter, the corresponding faculty becomes incapable of eliciting its act. For

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instance, a man may have an exceptionally sensitive hearing; yet, if the *meatus auditorius externus*,—or sound-passage of the ear,—should become much swollen by cold or any other cause, he will be made deaf for the time. In a somewhat similar way, previous indulgence in a *cake* or *preserves* will blunt the discriminating taste of the most accomplished judge in *wines*. Again: Every one knows how the action of *ice* will deaden feeling, or the sense of touch. Independently of all this, there is the most intimate connection between these faculties of sense and that mysterious nervous system which occupies the border-land between mind and matter; so that, even if the external organ of any sense were in a healthy and perfect condition, either destruction or paralysis of the nerve-centre or of the nerve appropriated to that organ would render any action of the particular faculty impossible. Hence, as St. Thomas points out, there is a marked difference between the intellectual and volitive faculties on the one hand, and the vegetative and animal faculties on the other. For the former not only emanate from the soul as their principiant, but inhere in it as in their only Subject; whereas the latter, while owning the soul as their source, inhere in the soul and in their special bodily organ together, as in their composite Subject. A further confirmation of this argument is to be gathered from comparing man with the inferior grades of life. For those same faculties of nutrition and growth exist in plants whose substantial forms are certainly informed by quantity, and whose powers are subject to the same information; while the faculties of sense belong to animals whose souls or animal-forms in the lower grades, according to the unanimous judgment of the School, are likewise quantified. And hence it is, that there are some animals which can be multiplied by simple severance. It cannot, indeed, be denied, that these faculties in the human soul are more perfect and of a higher order, (as a general, though not universal rule), than in other living things; just as the powers of nutrition and growth are of a higher order in an animal than in a plant. But, after all, there is a specific similarity; for there is a like determination to a particular organ, a like dependence on the unimpaired condition of that organ, and a like incapacity for actuation of the faculty elsewhere. Neither can it be urged with any show of reason, that these phenomena can, one and all, receive a sufficient explanation in the substantial union of the soul and body; and that the termination

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to quantity as existing in the body is enough, without postulating any potential or virtual information of the soul by quantity. For against this demurrer we put in the following pleas. First of all, in this hypothesis the faculties of the soul should be *equally* affected by quantity; because there would be an equal termination. There would be an equal termination; because all the faculties would be equally united to the body through the medium of the soul itself according to its substantial union. But this is far from being the case. On the contrary, the soul is *formally* act of the body, exclusively on the score of its vegetative and animal faculties. The intellectual and volitive faculties are independent of the body, are not (as is too often supposed) limited to any particular organ, and are more free in their energy, apart from the body than in union with it. It is true that the one faculty has been portioned off to the brain, the other to the heart; according to a belief far too general, not to have some foundation of truth in it. But the belief in question, together with the facts of experience which seem to confirm it, are both to be explained by the present action of the said faculties during the soul's union with the body. For the intellectual faculty cannot energize without *phantasmata* which are sensile in their nature and origin; and the more abstract the subject of thought, the feebler and less sustaining will be the *phantasma*. On the other hand, acts of the will are intimately connected with, and very often accompanied or followed by, emotion or passion. Again: The phenomena of vegetative and animal life, so far as we can see, are precisely the same in man as in other animals. Yet, in these latter, the vegetative and sensitive powers are, as Suarez maintains, quantitatively informed; and are not merely terminated to a quantified body by union. Finally: These two classes of faculties, according to the teaching of St. Thomas, exist in the human embryo, prior to its information by the soul, as the result of active generation; precisely after the same manner as in other animals. If, then, the soul on its arrival assumes these faculties to itself by a new entitative act; it does not seem reasonable to suppose, in face of all phenomena to the contrary, that the said faculties are translated into another order, however perfectioned they may be by the excellence of that substantial form in which they are rooted.

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DIFFICULTIES.

I. Accident which inheres in the entire composite affects simultaneously form and Matter, as though they were one. But quantity cannot affect the human soul; because this latter is a spiritual entity. Therefore, &c.

ANSWER. Let the *Major* pass. The *Minor* must be distinguished. *Quantity cannot affect*, or inform, *the soul* in its spiritual essence and its spiritual faculties,—granted; exclusively as act of the body and in its virtual and potential entity,—denied.

THE OBJECTION IS URGED. But quantity cannot affect the soul, even as form or act of the body. Therefore, the distinction is worthless. The *Antecedent* is thus proved. That only can be affected by quantity, which is capable of receiving it as an act. But the human soul, even as form of the body, is incapable of receiving quantity as an act; because it is incapable of extension. It is incapable of extension; because it is essentially simple and in itself spiritual. Therefore, the soul, even as form of the body, is incapable of being affected by quantity.

ANSWER. The *Antecedent* is denied. To the proof:—The *Major*, for the sake of brevity, may be simply granted. The *Minor* must be distinguished. *The human soul, even as form of the body, is incapable of receiving quantity as act,* that is to say, in its essential nature as a spiritual entity,—granted; considered virtually and potentially as informing, and united with, the body,—denied. The same distinction will apply to the prosyllogistic proposition that supports the *Minor*. *The soul, even as form of the body, is incapable of extension* entitatively,—granted; virtually and potentially,—denied. Touching this argument borrowed from the simplicity of the soul, it may be enough—and is certainly necessary—to interpose a remark that will greatly add to the clearness of the present answer. As St. Thomas is repeatedly reminding us, though the human soul is simple, this does not hinder a sort of composition of act and potentiality; which may be interpreted in two ways. One of the two will serve our purpose at present. There is a certain composition between the soul in its own essential entity and the faculties which are its properties and, consequently, (metaphysically speaking), accidental to it. Hence, an immediate in-

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formation may be possible to the latter, which would only be virtual in the former.

II. The next objection is directed against the argument, (which will be found towards the end of the proof of the second Member), derived from the union of the soul with organized Matter. Suarez denies the parallel between the two and, as a consequence, the inference deduced. He says that the soul, as substantial form, gives, but does not receive; whereas, if informed by quantity, it receives, but does not give.

ANSWER. Though there is an undoubted difference between the causality of a form and that of its Material Cause; yet it is scarcely correct to say, that it is all receiving in the case of the latter and all giving in that of the former. For dependence, —albeit (as in the instance of the human soul) it may be only partial,—and the presentation of a convenient Subject of inhesion, are gifts of Matter to its form. Moreover, freely granting that the causality of the form in general is superior to that of the Material Cause, if the question is considered in the abstract; yet, if we limit ourselves to the causality of the accidental form in particular as compared with the causality of its Subject, such superiority cannot be admitted. Neither can it be said that the soul does not give, in its potential union with quantity; since it endows the organisms of Matter with vegetative and sensitive powers by which the body grows, is perfected, and lives its animal life.

III. If quantity informed the entire composite; the human soul would be the effective principiant of quantity and mass. But an incorporeal form seems utterly disproportioned to the office of being such a principiant. Therefore, &c.

ANSWER. Corporeity is the first and universal form of material substance. For every material substance is a body. Yet Suarez would be loth to admit that Primordial Matter is a body; or that Matter, even when informed by quantity antecedently to its substantial information, (if such a thing were possible), could be *body*. For a body is plainly enough a complete substance. Whether, then, the substantial form of corporeity is discoverable in isolated and formal union with Matter or only exists in the virtue of other forms, does not affect the present question. For it must, in any case, virtually exist in every substantial form that actuates Matter.

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If so; the human soul, as form of the body, must virtually include in itself corporeity. But, if it virtually includes corporeity, *pro tanto* it must be effective of quantity and mass. And what greater disproportion is there, one is tempted to ask, between the human soul as virtually including corporeity and the same soul as virtually including vegetative and animal life, or as informing the pure potentiality of Matter? But, as virtually the form of corporeity, it must be virtually informed by quantity.

IV. In the body of a man immediately after death, more markedly if the death has been a violent one, there apparently remain for some considerable time the same accidents as informed the living body, with the exception of those faculties which belong exclusively to the living and are dependent on the soul. Thus, for instance, the *animal heat*, the *flexibility of the limbs*, the *form*, the *colour*, remain the same; and are subjected to only very gradual alteration. But, if the qualities, such as those just mentioned, remain; we justly conclude that the quantity remains the same, spite of the change of the substantial form. Therefore, the quantity does not inform the whole composite, but the Matter only.

ANSWER. This difficulty requires to be considered from different points of view, if the answer is to be exhaustive. Wherefore, i. Can we with any certainty determine in every case the precise moment of death, more particularly when the death is violent? In decapitation, for instance, can any satisfactory proof be produced that the soul departs at the identical moment when the head is severed from the trunk? It is not sufficient to allege the physical fact, that the body thus dissevered is incapable of contributing to the functions of vegetative and animal life; even supposing that the fact can be incontestably confirmed. The substantial union is not necessarily dissolved as soon as its lower powers are either paralyzed or otherwise incapable of action. However, as the general conviction of medical men in the present age seems to be in favour of the opinion that death immediately follows upon decapitation, let us proceed to examine into the subject on this assumption. ii. To repeat an observation already made in early pages, accidents that belong to the same generic nature do not sensibly change so long as the transformation is within the limits of the same genus. But the body of the living man and that of the dead

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man, till corruption sets in, are generically the same. They are both human. Hence, under the substantial corpse-form the features, shape, dimensions, remain, together with the quantity. Yet, iii. They will not remain *numerically* the same; because they receive a new act under the new substantial form. But, iv. The difficulty is not yet satisfactorily solved; because, in the instances brought forward, qualities remain,—such as *heat, flexibility, colour*,—which are looked upon as specific properties of a living man. By way of answer it may be permitted to suggest an hypothesis. As in the generation of man, the embryo is first informed by vegetative and afterwards by animal life, previous to the union with the soul, at least in the judgment of the Angelic Doctor; may it not possibly be, that, on decapitation which renders the body unfit (if so be) to continue longer as the Material Cause of the soul or even of animal life, the vegetative form is educed out of the potentiality of the Matter, till, after an interval more or less protracted, the corpse-form supervenes? Certainly, there are known facts that favour the hypothesis. For instance, the *nails* have been known to grow after death; and M. Claude Bernard is our authority for stating that *sugar has been secreted in the liver subsequently to the same event.* v. It is not universally the opinion of physicists, that the union of the soul and body is invariably dissolved at the moment of death, especially if the death should be a violent one. Some anatomists, among others Professor Soemmering, have maintained, 'that the individual consciousness, as well as the perceptibility of pain, remains in the head for some time after it has been separated from the body.' vi. One thing is certain, that, after some time these lingering accidents make way for those which are properties of the corpse-form,—to wit, *paleness, rigidity, icy coldness.* vii. With especial reference to *heat*, (which offers, perhaps, the greatest difficulty), may it not be justly urged, by way of explanation, that, as the heat from a man's body will remain in a bed for some considerable time after the occupant has left it; so the heat, propagated through the body, may remain long after its efficient cause has ceased to act? viii. The phenomena, which are thus objected against the teaching of St. Thomas, offer difficulties hardly less formidable to the doctrine maintained by Suarez. For, even supposing that the quantity and qualitative accidents should inhere immediately in the Matter, Suarez does not deny that qualities dispose for the reception of the new form, or that they follow the

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nature of the form. How is it, then, that the alleged accidents remain; since they indispose the Matter for the reception of the corpse-form and are foreign to its nature? ix. It seems hardly philosophical to reject a teaching, otherwise so well grounded in reason and experience, on the strength of certain facts whose relation to the question is uncertain and whose origin and cause are involved in no little obscurity.

PROPOSITION CLXVI.

Though the complete composite is the Material Cause of both quantity and qualities; yet quantity is with reason said to follow the Matter rather than the form, while quality is said to follow the form rather than the Matter.

This Proposition needs only a brief declaration. i. *Quantity is said to follow the Matter rather than the form* for three principal reasons. One is, that it is undistinguished in its entity and co-extensive with Matter; seeing that all material substance is quantified, and quantity includes no real difference of species. Another is, that it is purely passive and knows no other energies than those of the inhering qualitative forms; just as Primordial Matter is purely passive, and has no energy save that of its substantial form. Thirdly, quantity is the Subject of all qualitative, as Primordial Matter is the Subject of all substantive, forms. ii. *Quality, on the other hand, is said to follow the form rather than the Matter,* first of all, because it has a variety of species which inform and determine the quantity, or rather, quantified substance. Then, secondly, it is active and instrumental agent of the substantial form.

Note.

These and the like expressions of universal use in the School, so far from lending any confirmation to the opinion of Suarez, rather tell against it. For since the qualities immediately inhere in quantity, if quantity should be said to follow Matter, because the latter is its Material Cause; for a like reason qualities must also be said to follow the Matter, because,—as they immediately inhere in quantity,—according to the hypothesis they would mediately inhere in Matter as their adequate Material Cause.

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PROPOSITION CLXVII.

No Accident remains numerically the same in the generated, as in the corrupted substance; although they may remain specifically and sensibly the same, provided that their entity is connatural with the newly generated substance.

This Proposition needs no declaration; since it has already more than once been explained and virtually proved in previous Theses.

PROPOSITION CLXVIII.

In substantial transformations and generations, the quantity of the corrupted substance does not pass away, but receives a new actuation with the generation of the new composite. The same is true of connatural qualities.

This Proposition likewise needs no declaration; as its truth has been sufficiently manifested in past discussions.

PROPOSITION CLXIX.

The doctrine embodied in the preceding Propositions of this Section is confirmed by the authority of the Angelic Doctor.

The evidence in confirmation of the present Proposition shall be inaugurated by a remarkable passage in which St. Thomas (or whoever may be the author or compiler of the *Opusculum* here quoted) explains at great length the relation of accident to substance. The great obscurity of the text, (which reads rather like short notes dotted down for a lecture, or notes taken from the lecture by a pupil, than an elaborate essay), will plead in excuse for the accompaniment of a running commentary by way of explanation. Its author, then, has been engaged in showing, that quantity and the other accidents of material substance are said to follow Matter rather than form, because they are extraneous to the essence of bodily substance; and Matter is more remote from the perfect essence than form which determines the essence.

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He now proceeds to explain, with greater metaphysical precision, what is meant by the phrase that *quantity follows Matter*. 'How quantity follows Matter[1],' he writes, 'is to be gathered from the forms whose nature it is to inform Matter; seeing that Matter cannot be known, save by its analogy to forms; as it is said in the first Book of the *Physics*. In order, therefore, to a clear understanding of this question, you must know that certain general and certain special forms have a natural capacity of inhering in one and the same Matter,' not together, as two distinct substantial forms actuating the same Matter; but either as respectively *capable* of informing the potentiality of the Matter or, (and this is more germane to the argument of the Angelic Doctor), forasmuch as one is virtually included under the other,—the more general in the more specific: 'And that it is of the nature of these special forms to effect in Matter whatever the general forms are naturally capable of effecting, and more besides; as Boetius says. Now, it is of the nature of a form,' precisely and exclusively as form or act, 'to effect nothing save that which belongs to act,' i. e. to make a thing actual. 'Wherefore, if there should be aught following the entity of Matter, as ordained to one form that is essentially distinct from another form; if it does not appertain to the actuation of Matter *as* Matter by the form *as* form, it is not effected save by means of some other determined form. To illustrate this point:—There is in Matter a potentiality for some general form, for instance, for the form of corporeity,' (body-form), 'which gives to it the being of a body, as soon as you introduce the Matter that has been transmuted into it. A more perfect form does the same, (and something further); since this belongs to the act,' that is to say, to the actuation itself. An explanation of this rather obscure passage shall be given by the

[1] 'Quomodo igitur quantitas sequatur materiam, considerandum est a parte formarum quae natae sunt materiam informare, cum materia non sit scibilis nisi per analogiam ad formas, ut dicitur 1 Phys. Ad hujus igitur evidentiam sciendum est, quod in una et eadem materia natae sunt inesse quaedam formae generales et quaedam speciales, quarum natura est in materia facere quidquid formae generales natae sunt facere, et adhuc amplius, ut dicit Boetius. Forma autem nihil est nata facere, nisi id quod ad actum pertinet. Et ideo si quid fuerit sequens esse materiae in ordine ad aliquam formam distinctam in essentia sua ab alia forma, si hoc non pertineat ad esse actu ipsius materiae per ipsam formam, non fit id nisi per aliam formam certam: ut puta, in materia est potentia ad formam aliquam generalem, sicut ad formam corporeitatis, quae dat esse corpus, cum introducta fuerit materia ad illam transmutata; hoc idem facit forma perfectior, et adhuc amplius; hoc enim ad actum pertinet. Quod

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help of another quotation immediately to follow. The body-form is the most general, the universal, form of material substance. Acting purely *as* a form, it simply actuates Matter; so that body might truly be described as *Matter actuated.* Now, a more perfect and specific form can do as much as this, and more besides. For instance, the vegetative form actuates Matter, and makes it a body; just as every material form does. But it effects something more. It makes Matter to become a body informed with vegetative life; and this vegetative life is the specific essence which goes beyond mere actuation. Wherefore, if there is anything that accompanies the actuated Matter, not only *as* actuated, but as actuated *according to such or such a particular essence;* such an entity will be the result of the *specific* action of *the specific* form. To take an instance:—*Assimilative force,* or power, follows Matter as actuated by the specific form of vegetative life; so does *quantity.* But there is this notable difference between the two. The latter accompanies the actuation *as such;* for all actuated Matter is body, and there is no body without quantity. But assimilative power accompanies the actuated Matter, as actuated by the specific form of vegetative life. To resume:—'But, so far as regards Matter, it' (that is to say, the actuation) 'will not be effected by each form indifferently. For, to be this *particular* entity does not enter into its mere actuation; neither does it belong to its mere being, but to its own special essence. For there is in Matter, as we have said, a potentiality receptive of the body-form; and that form makes it such when it informs it. The more perfect form does the same, as we have said. But the more perfect form, though it produces the same effect as the general form, nevertheless does not perfect the same potentiality which the more general form would do, if it were there. This is plain. For the Matter existing under the more perfect form, is in potentiality relatively to the general form. But this could not be the case, if its potentiality relatively to the general form

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autem ad materiam refertur, non fiet ab utraque forma indifferenter: hoc enim esse actualitatis non est, nec ad esse pertinens, sed ad ipsam suam essentiam. In materia namque est potentia ad formam corporis, ut dictum est, et hoc facit in illa cum ei infuerit: hoc etiam facit forma perfectior, ut dictum est. Sed forma perfectior, licet faciat idem quod facit forma generalis, non tamen eamdem perficit potentiam quam perficeret forma generalior, si inesset. Et hoc manifestum est: nam materia sub forma perfecta existens, est in potentia ad talem formam: quod non contingeret, si ejus potentia ad illam formam esset perfecta per aliam formam. Id igitur quod potest fieri

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were fulfilled by the latter.' This needs a little explanation. The writer says, then, that Matter does not exhibit, so to speak, the same potentiality for actuation by the general, as it does for actuation by the specific, form;—to express it otherwise, in the latter case the Matter must be specially disposed. A sure proof of this is, that Matter under actuation of the specific form retains a capacity for being actuated, (in the event of the retirement of the latter,) by the more general form. Thus, for instance, the Matter which is now in a *plant* may be hereafter under the form of *coal*. But such could not be the case, if the vegetative form exhausted the potentiality of Matter for the body-form. To continue:—'That, therefore, which admits of being effected in Matter by diverse forms, is in a state of indifference relatively to the many forms and to the one perfect form; for it looks simply to a composite arising out of the union of Matter and form, whence there arises actual being. Since in this composite there cannot be more substantial entities under one form than under another; there follows from one form everything which is found in distinct composites as the result of distinct forms.' That is to say, in all that exclusively belongs to *mere actuation* or substantial existence, each composite has that which the other has, or that all the rest put together can have; for they are, each and all, material substance in act. The writer proceeds: 'But the proportions (or dispositions) which appertain to such a portion of Matter in particular, ordain it determinately for the reception of distinct essences of forms, so that its potentiality which looks to one given form is fulfilled by no other; even though that other may have efficacy and perfectness abundantly sufficient to effect whatever the other forms have been wont to effect, and yet more. If, then, there should happen to be accidents that are consequents of Matter in its relation to the general form, they necessarily accom-

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in materia per diversas formas, indifferenter se habet ad plures, et ad unam perfectam: hoc enim spectat ad ipsum constitutum ex materia et forma, cujus est esse actu. In quo cum non possint esse plura esse substantialia sub una forma quam sub aliqua alia forma, per unam formam sequuntur omnia quae in diversis per diversas formas contingunt. Proportiones vero quae pertinent ad *istam* materiam, ordinant eam ad diversas essentias formarum determinate: ita quod potentia sua quae est ad unam formam, non perficitur per aliam, licet alia fuerit abundans in virtute et perfectione ad faciendum quidquid aliae formae facere consueverunt, et amplius. Si qua igitur accidentia sunt consequentia materiam in ordine ad formam generalem, necessario consequuntur eam, vel secundum esse actu quod ab illa recipit, vel secundum perfec-

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pany Matter in one of two ways;—either as concomitants of its actuation by that form or as concomitants of the perfectioning, by that form *in particular*, of a potentiality which can be satisfied by no other form.' That is to say, any accidental concomitants—in other words, properties—of the general form may be regarded as following Matter in two ways, accordingly as Matter is conceived as actuated by the general, or as actuated by the specific, form. In the former point of view it is regarded as a property of the composite; in the latter, as a preparation for the reception of the specific form. To proceed with the quotation:—'When, then, such *special* form perfects the Matter and reduces it to act; then, the accident,—which accompanies the Matter as disposed to that special form that perfects the potentiality of Matter according to a determinate grade in essence,—will be present with the essence of the Matter as perfected, not destitute of form, but in its relation to the act of that composite. Such is the Matter in which accident finds its being; for an entity is a Subject of accident, in so far as it is actual.' That is to say, those accidents which are consequents of the general form,—say, the body-form,—do in nowise inform the Matter prior to its actuation. For, whether we consider them as properties of the general, or as dispositions for the reception of the specific, form; in either case they are *de facto* the consequents of actuated, not unformed Matter. The writer goes on to say: 'From this it is easy to understand what is meant by accident following Matter in its order of relation to a general, or to a particular, form. For the expression does not regard the simple actuation of Matter; since this takes place indifferently in Matter under one substantial form as under many. But it refers to the essential nature of the accident in relation to the potentiality of the Matter, which cannot be perfected indiscriminately, but by a determined form proportioned to the essence of

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tionem potentiae suae per illam formam solum, quae non potest per aliam formam perfici. Quando igitur talis forma sola perficit materiam, et facit esse actu in ea; tunc accidens quod materiam consequitur in ordine ad illam formam quae perficit potentiam materiae secundum certum respectum in essentia, aderit essentiae materiae perfectae, non nudae, sed secundum actum illius compositi. Et haec est materia, in qua accidens habet esse: est enim aliquod subjectum accidentis, secundum quod est actu. Ex quo facile est scire, quid sit accidens sequi materiam in ordine ad formam generalem, vel in ordine ad formam specialem: hoc enim non respicit esse actu accidentis, cum hoc indifferenter sit in materia ab una forma et a multis. Sed respicit essentiam ejus respectu potentiae materiae, quae non potest perfici indifferenter, sed

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such Matter.' That is to say, the expression *accident follows Matter in its relation to this or that form* does not refer to the mere actuation of accident; for any substantial form would be sufficient, (as it is certainly necessary), for *that*, without distinction or difference. But it alludes to the essence, or nature, of the accident, as proportioned to, or proportioning for the reception of, this or that specific form. To resume: 'For, if it were to be referred to the actuation of accident, no distinction could ever be made between accidents as ordered to one form rather than to another; since their actual being and all that appertains thereto are caused indiscriminately by any whatsoever more perfect form, as we have said. Hence, when any perfect form, which effects whatever other forms are wont to effect in all that regards actuation, is received in Matter; all the accidents, according to the entity they have, follow the actuation of that composite which is the result of such perfect form. The *essence*, however, of the accident does not follow the actuation' of the composite; 'but follows Matter in its order of relation to that form whose alone it is to perfect the essence in accordance with the particular receptivity proportioned to receive it. Such an accident is quantity, as well as those accidents which are in different proportions in compound bodies; for instance, *whiteness* and *blackness*.' The writer adopts these two instances in illustration; because *colours*, (using the term in its vulgar acceptation), are among the most generic qualities of material substance, and it is to such that his remarks apply. To resume: 'Wherefore, such accidents, on the withdrawal of the perfect form and the destruction of the species, remain in their essential natures; but receive now one actuation, now another. For, when the perfected entity perishes,

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per certam formam essentiae illius materiae proportionatam. Si enim referendum esset ad esse actu accidentis, nunquam distingueretur inter accidentia quae sequuntur materiam in ordine ad unam formam vel ad aliam formam: cum esse actu, et quidquid ad ipsum pertinet, indifferenter sit a quacumque forma perfectiore, ut dictum est. Unde, cum aliqua forma perfecta in materia recipiatur, quae facit quidquid aliae formae facere solent de his quae ad actum pertinent, omnia accidentia secundum esse quod habent, sequuntur esse actu illius compositi, quod ab illa forma perfecta; esse vero accidentis ipsius non sequitur esse actu, sed sequitur materiam in ordine ad formam cujus solum est illam essentiam perficere secundum potentiam ad eam ordinatam. Et tale accidens est quantitas, et ea quae sunt secundum diversas proportiones in mistis, ut albedo et nigredo. Et ideo talia accidentia, forma perfecta ablata et destructa specie, manent in essentiis suis, aliud et aliud esse actu habentia. Non enim, re perfecta pereunte, perit ordo materiae ad formam generalem, sed potius per

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the relation of Matter to the general form does not perish; but rather is perfected by it in the actuation which it receives.' For instance, when a *plant* dies, it becomes for the time an inanimate body till corruption sets in. The Matter, therefore, previously actuated by its vegetative form, preserves its relation to the body-form through the disposition of its generic accidents; and is, together with these accidents, actuated by the newly educed form of corporeity, or rather by another general form under which the body-form is virtually contained. St. Thomas proceeds: 'And this is the reason why dimensive quantity remains in a body living alike and dead; and similarly, whiteness, and blackness, and the scars of wounds, which have been received in quantity. Neither is there a passing-away of accidents; and this for the same reason. For the origin and root of the accident remains; in that the same Matter with its order of relation to the general form remains, although there is a transition in actual being. (Hence,'—that is, owing to this transition,—'it comes to pass, that there is a manifold change of colour in a body dead and living; which could not take place, if colour had not different actuations). This arises from the diversity of acts or forms in the existent things, one of which, however,' (to wit, the body or body-form), 'is not changed in its essence; and it is this essence, that the accidents aforesaid,' (that is to say, *quantity*, *whiteness*, *blackness*, *scars of wounds*, etc.), followed[1]. On the other hand, accidents that follow the Matter in its ordered relation to a special form, such as *shape*, (for in every species there is a determined shape: Wherefore, among all the other determinate accidents, *shape* alone, of itself, reveals the species of any entity;

[1] The wording of this paragraph is very obscure; fortunately the sense is clear enough. The author has ventured to introduce a parenthesis, as seemingly best adapted to preserve the continuity of the argument.

eam perficitur in esse actu. Et ideo in vivo et mortuo quantitas dimensiva manet, et similiter albedo et nigredo et vestigia vulnerum quae in quantitate recepta sunt. Nec est accidentium transitus propter hoc; manet enim origo et radix accidentis, eadem materia in ordine ad formam generalem remanente, licet sit transitus in esse actu. Inde est quod diversimode mutatur color in vivo et mortuo; quod non contingeret, nisi aliud et aliud esse actu haberet: quod est ratione diversorum actuum existentium, quorum tamen alterum in esse non est mutatum, et illud sequebantur praedicta accidentia. Accidentia autem quae sequuntur materiam in ordine ad formam specialem, cujusmodi est figura, (in qualibet enim specie est certa figura. Et ideo inter omnia alia accidentia certa sola figura speciem rei cujuslibet demonstrat: alia est enim figura

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for the shape of a man is one, the shape of a horse is another), cannot remain, save in an equivocal sense, on the destruction of the species. Nevertheless, the shape of an individual man remains the same; just as the quantity remains in which it inheres, since shape is a quality in quantity. For all the accidents of an individual are common accidents; not so, specific accidents. Wherefore, the former follow Matter in its order of relation to the general form; while Matter is the principiant of individuation, under definite dimensions; and these are common accidents.' It may at first sight seem strange, that accidents proper to the individual should be designated common; those of a species as not common. But two things must be borne in mind. One is, that accidents do not individuate. They, like their Subject, are individualized by actuation, or existence. The other is, that accidents are called *common* or *proper* according to their essence. Now, dimensive quantity is common to all material substance; while the *horse-shape*, for instance, is proper to the *horse*. Daniel Lambert was principally individualized by his *fatness;* yet fatness belongs to other animals as well as man. In what sense material substance is said to receive individuation from Matter under determinate dimensions, has been already explained in the third Book. St. Thomas thus concludes: 'If, on the other hand, there are in some sense accidents that follow the form, like quality and some that are principiants of actions and *passions,*' (or receivings), 'they do not remain on the destruction of the species, save in an equivocal sense; since they are no longer capable of the same actions. Other accidents there are that follow the form, which do not leave any likeness even of themselves behind; as, for instance, risibility and the like.' Active potentialities, or faculties, are principiants of action, and belong to the second species in the Category of Quality. Passions, or passive qualities, form the third

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hominis, et alia equi), destructa specie rei, non possunt manere, nisi equivoce. Manet tamen eadem figura individui hominis, sicut et quantitas in qua est: est enim figura qualitas in quantitate. Omnia enim accidentia individui sunt communia accidentia, sed speciei accidentia non: et ideo sequuntur materiam in ordine ad formam generalem, cum materia sit principium individuationis sub dimensionibus certis, quae sunt quaedam accidentia communia. Si qua autem accidentia sunt quae sequuntur formam, sicut qualitas, et quaedam quae sunt principia actionum et passionum, non manent forma destructa nisi equivoce, cum non possint in easdem actiones amplius. Alia autem accidentia sunt sequentia formam, quae nec etiam similitudinem aliquam post se relinquunt, ut risibile et alia hujusmodi.' *Opusc.* xli (*aliter* xxxviii) c° 1.

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species. *Blushing, whiteness, blackness, heat, cold,* are instances of passions.

Let us briefly sum up the conclusions of the Angelic Doctor, in so far as they bear on the doctrine of the present Section. i. All accidents really and physically inform *the composite*, receiving their actuation in it; for they really follow upon the constitution of the composite. Nevertheless, considering the question metaphysically, the essence or entity of the accident, as distinct from its actuation, may be conceived as following the Matter or as following the form; accordingly as the nature of the accident has an affinity, on the one hand, for the passivity and potentiality of the Matter or, on the other hand, for the determinating activity of the form. Hence, quantity is said to follow Matter, because it is purely passive and receptive of qualities. For a similar reason, certain passive qualities are said to follow the Matter. On the contrary, active qualities, as instruments of the substantial form, are said to follow the form. ii. Further: Since there is a gradation in substantial forms and their accompanying properties, and since the higher and more perfect forms virtually include the inferior; the properties of the inferior or general form together with the general form itself may be justly regarded, from a metaphysical point of view, as dispositions of the Matter for the reception of the superior or specific form. iii. Hence, the essences of certain accidents that are properties of the generic form remain in the composite actuated by the specific form; while the essences or natures of others, which are specific, disappear. But, iv. The entities of such accidents as remain throughout the substantial transformation receive a fresh actuation, or existence, from the new substantial form in the new composite; so that they are not *numerically* the same in both substances. This is in exact conformity with the uniform teaching of St. Thomas. For instance, talking of a substantial transformation in which heat remains as a quality under both terms of the change, he remarks that the heat 'remains specifically, but not numerically, one and the same; because the Subject does not remain the same[1].' v. The properties, whether generic or specific, though from one point of view they may be regarded as prior to the constituted composite and from

[1] 'Cum ergo ex hoc aere fit hic ignis, calor manet idem specie, sed augmentatus; non tamen idem numero, quia non manet idem subjectum.' *Spiritu. a.* iii, 19[m].

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another point of view as subsequent to it; nevertheless, become physically actual or existent at the same time as the Matter, by the one same act of the substantial form. Thus, it may be said with reason, that the substantial form brings all its own accidents in its train.

That important point of the doctrine of St. Thomas, wherein he teaches the gradation of substantial forms and the virtual inclusion of the inferior or generic in the superior forms and how, in consequence, the inferior may be regarded as forming part of the Matter receptive of the superior form, is clearly enforced in the following passage. 'It is the same form numerically[1],' writes the Angelic Doctor, 'to which an entity owes it that it is substance, and that it is in the last most special species, as well as in all the intermediate genera. It remains, then, to be observed that, since the forms of the things of nature are like *numbers*, in which the species differs with the addition or subtraction of a unit, (as is said in the eighth Book of the *Metaphysics*); we must understand the diversity of natural forms, by which Matter is constituted in diversity of species, to be due to the fact that one form adds a perfection which goes beyond another form. For instance, one form constitutes Matter in bodily entity only. (For this must be the lowest grade in the forms of animals; because Matter is only in potentiality to,' that is, receptive of, 'bodily forms. For things that are incorporeal, are immaterial; as has been shown in preceding Articles). But another more perfect form constitutes Matter in corporal being and, further, gives to it living being. Again, another form gives it both corporal and living being and adds, over and above, sensitive being. So is it in like manner with other forms. It behoves us, then, to understand, that the more perfect form, (accordingly as, in union with the Matter, it con-

[1] 'Oportet igitur dicere, quod eadem numero forma per quam res habet quod sit substantia, et quod sit in ultima specie specialissima, et in omnibus intermediis generibus. Relinquitur ergo dicendum, quod cum formae rerum naturalium sint sicut numeri, in quibus est diversitas speciei, addita vel subtracta unitate, ut dicitur in 8 Metaphys.: oportet intelligere diversitatem formarum naturalium, secundum quas constituitur materia in diversis speciebus, ex hoc quod una addit perfectionem super aliam, ut puta quod una forma constituit in esse corporali tantum: (hunc enim oportet esse infimum gradum formarum animalium, eo quod materia non est in potentia nisi ad formas corporales. Quae enim incorporea sunt, immaterialia sunt, ut in praecedentibus ostensum est). Alia autem perfectior forma constituit materiam in esse corporali, et ulterius dat ei esse vitale; et ulterius alia forma dat ei et esse corporale, et esse vitale, et super hoc addit ei esse sensitivum; et sic est in aliis. Oportet ergo

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stitutes the composite in the perfectness of a lower grade), may be regarded as material in relation to a higher perfectness; and so on, as you go upwards. For instance, Primordial Matter, as already constituted in *corporal being*, is the Matter relatively to that ulterior perfection which is *life*. Hence it is that *body* is the genus of *living body;* and *animated*, or *living*, is the difference. For the genus is taken from the Matter; and the difference, from the form. Consequently, in a certain sort of way, one and the same form, as actuating the constitution of Matter in an inferior grade, is midway between Matter and itself, inasmuch as it constitutes Matter in a higher grade.' That is to say, the living form of a *dog*, for instance, by one and the same act constitutes Primordial Matter a *body* and a *dog*. Therefore, considered as substantial act of *body* exclusively, it becomes (as it were), a disposition of the Matter for receiving itself as the more perfect living *dog-form*. In this wise it constitutes itself midway between Matter and itself considered in its ulterior perfection. St. Thomas continues: 'Now, the Matter,' (i.e. as actuated by one of these specific forms), 'regarded as constituted in substantial being according to the perfection of an inferior grade, can, in consequence, be regarded as subject to accidents. For substance in that lower grade of perfection must necessarily have some accidents of its own, which of necessity must be inherent in it. Thus, for instance, from the mere fact that Matter is constituted in corporeal being by forms, it *ipso facto* follows that there are dimensions in it, by virtue of which Matter is cognized as divisible into distinct parts; that so, according to its distinct parts, it may be capable of receiving diverse forms. Furthermore, from the fact that Matter is

intelligere quod forma perfectior, secundum quod simul cum materia compositum constituit in perfectione inferioris gradus, intelligatur ut materiale respectu ulterioris perfectionis, et sic ulterius procedendo; utpote materia prima, secundum quod jam constituta est in esse corporeo, est materia respectu ulterioris perfectionis, quae est vita; et exinde est quod corpus est genus corporis viventis; et animatum, sive vivens, est differentia. Nam genus sumitur a materia, et differentia a forma; et sic quodammodo una et eadem forma, secundum quod constituit materiam in actu inferioris gradus, est media inter materiam et seipsam, secundum quod constituit eam in actu superioris gradus. Materia, autem prout intelligitur constituta in esse substantiali secundum perfectionem inferioris gradus, per consequens intelligi potest ut accidentibus subjecta. Nam substantia secundum illum inferiorem gradum perfectionis necesse est quod habeat quaedam accidentia propria quae necesse est ei inesse; sicut ex hoc quod materia constituitur in esse corporeo per formas, statim consequitur ut sint in ea dimensiones, per quas intelligitur materia divisibilis per diversas partes, ut sic secundum diversas sui partes possit esse susceptiva diversarum formarum; et ulterius ex quo materia

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cognized as constituted in a definite substantial being, it can be cognized as capable of receiving accidents by which it is disposed for further perfection; and by these means Matter becomes fitted for receiving further perfection. Now, these dispositions are presupposed to the introduction of the form into the Matter by the efficient cause; although' (really) 'they are certain accidents, not properties of the form, which however are caused in Matter only by the form. Hence, they are not presupposed in Matter before the form, as though they were' (really) 'dispositions for receiving the form; but the form is the rather presupposed to them, as cause to its effects. In this way, therefore, since the human soul is a substantial form, because it constitutes man in a determined species of substance; there is no other substantial form between the soul and Primordial Matter,' (which is the precise point discussed by St. Thomas in the Article from which this quotation has been taken), 'but man is perfected by the rational soul itself according to the different grades of perfection, so as to be *body*, and *animated body*, and *rational animal*.' In this passage, (besides much that is confirmatory of the doctrine contained in the previous quotation), we have a very lucid statement and demonstration of the truth, that quantity and those other accidental dispositions, as they are called, for the reception of the form are not really in Matter as their exclusive Material Cause, antecedently to its actuation; but that they are effects of the actuating form which prepares its own pathway and, as such, inhere in the complete composite.

This last point, which assumes an important place in the present discussion, is still more clearly maintained by the Angelic Doctor in a passage which could in no case have been omitted here, since it incidentally includes a statement that seems, at first sight, to contradict that which St. Thomas has so clearly laid down in the

intelligitur constituta in esse quodam substantiali, intelligi potest ut susceptiva accidentium quibus disponitur ad ulteriorem perfectionem, secundum quam materia fit propria ad ulteriorem perfectionem suscipiendam. Hujusmodi autem dispositiones praeintelliguntur formae ut inductae ab agente in materiam, licet sint quaedam accidentia propria formae, quae non nisi ex ipsa forma causentur in materia; unde non praeintelliguntur in materia formae quasi dispositiones, sed magis forma praeintelligitur eis, sicut causa effectibus. Sic igitur, cum anima sit forma substantialis, quia constituit hominem in determinata specie substantiae, non est aliqua alia forma substantialis media inter animam et materiam primam; sed homo ab ipsa anima rationali perficitur secundum diversos gradus perfectionum, ut sit scilicet corpus, et animatum corpus, et animal rationale.' *Anima*, *a.* ix, *c.*

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two quotations just given. In the Article about to be brought before the notice of the reader, St. Thomas proposes to himself this problem: *Whether the rational soul is united to the body by the intervention of accidental dispositions.* He decides in the negative. For, 'It is impossible,' he writes, 'that any accidental disposition should intervene between body and soul, or between any substantial form whatsoever and its Matter. And the reason is, that since Matter is in potentiality to all acts according to a definite order, of necessity that which is simply first among the acts is cognized as first in Matter. But the first among all the acts is actual being. It is impossible, therefore, to cognize Matter as *warm* or *quantified*, before it actually is. But it has actual being by means of the substantial form which causes being simply . . . Hence, it is impossible that any accidental dispositions whatsoever could pre-exist in Matter, prior to the substantial form[1].' With yet greater clearness, in his answer to the first objection made against his resolution of the question, wherein it is urged that *there cannot be a diversity of substantial forms in Matter, unless distinct portions of Matter are presupposed, and that to presuppose distinct portions of Matter is to presuppose dimensive quantity as a disposition*, the Angelic Doctor makes the following reply. 'A more perfect form virtually contains whatever is proper to inferior forms; consequently, existing one and the same, it perfects the Matter in different grades of perfection. For it is one and the same form essentially, by which a man is *actual being*, by which he is *body*, by which he is *living*, by which he is *animal*, by which he is *man*. Now, it is plain that appropriate accidents' (properties) 'accompany each genus. As, then, Matter is preconceived as perfected in being before the concept of its corporeity, and so for the rest; in like manner, the accidents, which are properties of Being, are preconceived before corporeity. In this way dispositions are preconceived in Matter, prior to the form; not in regard of the

[1] 'Impossibile est quod aliqua dispositio accidentalis cadat media inter corpus et animam, vel inter quamcumque formam substantialem et materiam suam. Et hujus ratio est, quia cum materia sit in potentia ad omnes actus ordine quodam, oportet quod id quod est primum simpliciter in actibus, primo in materia intelligatur. Primum autem inter omnes actus est esse. Impossibile est ergo intelligere materiam prius esse calidam, vel quantam, quam esse in actu. Esse autem in actu habet per formam substantialem, quae facit esse simpliciter, ut jam dictum est (art. 4 hujus quaest.). Unde impossibile est quod quaecumque dispositiones accidentales praeexistant in materia ante formam substantialem.' 1ae lxxvi, 6, *c.*

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entire effect of the form, but of its 'subsequent effect[1];' that is to say, these dispositions are preconceived before that ultimate and completorial effect of the form, (as isolated by conceptual abstraction), which specifically constitutes the nature; not of the entire effect. For this would include simple actuation,—the first of all conceivable acts substantial or accidental; and would exclude all previous dispositions of Matter as being metaphysically impossible. In these two passages, more pronouncedly in the second, the Angelic Doctor introduces into his orderly grades of substantial forms one that he represents as anterior to corporeity, viz. that which contents itself with giving actual being to Matter. But this would seem to contradict his statement, previously cited, that corporeity is the first and most general form in the order of constitution of material substance. Yet the contradiction is only apparent. St. Thomas in these last quotations is looking at the question from a purely metaphysical point of view; and metaphysically speaking, a thing must first *be*, before it can be *such or such*. Wherefore, the entitative act is prior in order of nature to the specific constitution. But if, on the other hand, we look to the *essence* of material substance, (for the former priority is verified in the case of every whatsoever entity), as one may say, physically; the first, necessary, universal, form is corporeity, by virtue of whose great property,—quantity,—Matter becomes capable of division and, as a consequence, of receiving distinct and various forms. For body, of itself, would indifferently embrace all Matter. Such an explanation is not ready-made for the occasion; it is the explicit teaching of St. Thomas. Thus in an Article which is devoted to precisely the same problem, the Angelic Doctor proposes to himself a new objection against his doctrine, which is this. *Dimensions exist in Matter antecedently to the element-forms. But dimensions are accidents and presuppose some substantial form or other in Matter. Otherwise, accidental being would go before sub-*

[1] 'Forma perfectior virtute continet quidquid est inferiorum formarum: et ideo una et eadem existens perficit materiam secundum diversos perfectionis gradus. Una enim et eadem forma est per essentiam, per quam homo est ens actu, et per quam est corpus, et per quam est vivum, et per quam est animal, et per quam est homo. Manifestum est autem quod unumquodque genus consequuntur propria accidentia. Sicut ergo materia praeintelligitur perfecta secundum esse ante intellectum corporeitatis, et sic de aliis; ita praeintelliguntur accidentia quae sunt propria entis, ante corporeitatem: et sic praeintelliguntur dispositiones in materia ante formam, non quantum ad omnem ejus effectum, sed quantum ad posteriorem.' *Ibidem*, 1m.

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stantial. Therefore, antecedently to the form of a simple element, there pre-exists in Matter some other substantial form; à fortiori, *therefore, antecedently to the human soul.* To the objection St. Thomas replies as follows: 'Every generic as well as specific entity is accompanied by the accidents proper to such genus or species. Wherefore, no sooner is Matter cognized as perfected in the nature of this genus which is *body*, than dimensions, which are the proper accidents of this genus, can be cognized in it; and thus, diverse element-forms will follow upon a conceptual ordering in Matter, according to its distinction of parts[1];' that is to say, though really and physically the elementary form,—say, hydrogen,—gives corporeity and quantity to Matter, just as the human soul does; nevertheless, in the intelligible order corporeity gives dimensive quantity to Matter, as preparatory disposition for the reception of the element-forms. In another of his works St. Thomas expresses himself in a similar way. These are his words: 'Quantitative dimensions are accidents that accompany corporeity which is consociate with entire Matter. Hence Matter, already cognized under corporeity and dimensions, can be cognized as separated into distinct portions; in order that so it may receive forms in ulterior grades of perfection. For though it is essentially the same form that gives to Matter its different grades of perfection; nevertheless, it is conceptually different[2].'

It now only remains to see whether the authority of St. Thomas can be invoked in support of the answer embodied in the *hundred and sixty-fifth* Proposition to the palmary argument of Suarez, based on the spiritual nature of the human soul. St. Thomas, then, in discussing the question, *Whether a spiritual substance can be united to a body*, in the course of his resolution of it writes as follows: 'In so far as the human soul surpasses the entity of corporal being and is capable of subsisting and energizing of itself, it is a spiritual

[1] 'Quodlibet esse generis vel speciei consequuntur propria accidentia illius generis vel speciei; unde quando jam materia intelligitur perfecta secundum rationem hujus generis quod est corpus, possunt in ea intelligi dimensiones, quae sunt propria accidentia hujus generis, et sic consequentur ordinem intelligibilem in materia, secundum diversas ejus partes, diversae formae elementares.' *Spiritu. a.* iii, 18m.

[2] 'Dimensiones quantitativae sunt accidentia consequentia corporeitatem, quae toti materiae convenit. Unde materia jam intellecta sub corporeitate, et dimensionibus, potest intelligi ut distincta in diversas partes; ut sic accipiat diversas formas secundum ulteriores perfectionis gradus. Quamvis enim eadem forma sit secundum essentiam, quae diversos perfectionis gradus materiae attribuit, ut dictum est, (art. 4 hujus quaest.), tamen secundum considerationem rationis differt.' 1ae lxxvi, 6, 2m.

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substance; but in so far as it is brought into contact with Matter and communicates its entity to Matter, it is the form of the body[1].' Here St. Thomas commences by drawing a distinction between the soul as a spirit and the soul as form of the body. But such a distinction has evidently enough no foundation in the essential nature of the soul which is simple. Where, then, has the Angelic Doctor discovered it? He shall tell us himself. 'The soul,' he writes, 'since it is a part of human nature, does not possess the perfection of its nature save in union with the body. This is apparent from the fact, that in the virtue or efficacy of the same soul there are certain faculties emanating from it, which *are not* the acts of bodily organs, (and in respect of them it surpasses any proportion with the body); and, again, there are other faculties emanating from it, which *are* the acts of bodily organs, (and this, inasmuch as it is capable of being conjoined with corporal Matter[2].' Yet more clearly does he enforce the same doctrine in another place. The problem debated is, *Whether all the faculties of the soul are in the soul as in their Subject.* St. Thomas solves it in this wise: '*That* is the Subject of an energizing faculty, which is capable of energizing; for every accident denominates its proper Subject. Now, it is the same entity that *does* energize and that *is capable of* energizing. Hence, of necessity the faculty belongs to that, as to a Subject, whose the energizing is; as the Philosopher too remarks in the beginning of his Work *on Sleep and Waking*. Now, it is manifest that there are certain energies of the soul which are brought into play without any bodily organ,—as, for instance, *thinking* and *willing*. Hence, the faculties that are the principiants of these energies are in the soul as in their Subject. On the other hand, there are certain energies of the soul, which are brought into play by means of bodily organs; as, for instance, *sight by means of the eye, hearing by means of the ear.* It is the same with all the energies of the nutritive and sensitive part. Wherefore, the facul-

[1] 'In quantum igitur supergreditur esse materiae corporalis, potens per se subsistere et operari, anima humana est substantia spiritualis; in quantum vero attingitur a materia, et esse suum communicat illi, est corporis forma.' *Spiritu. a. 2, c. v. fi.*

[2] 'Unde anima, cum sit pars humanae naturae, non habet perfectionem suae naturae nisi in unione ad corpus; quod patet ex hoc quod in virtute ipsius animae est quod fluant ab ea quaedam potentiae quae non sunt actus organorum corporalium, secundum quod excedit corporis proportionem; et iterum quod fluant ab ea potentiae quae sunt actus organorum, in quantum potest contingi a materia corporali.' *Ibidem*, 5[m].

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ties which are the principiants of such operations, are in the composite as in their Subject, and not in the soul only[1].' Add one more passage to this *Lemma* from psychology; and all the material will be ready to hand, from which to draw the required conclusion. St. Thomas is discussing the question, *Whether all the powers of the soul remain in the soul after its separation from the body.* He distinguishes, as before, between the faculties of the upper and of the lower part of the soul,—to adopt a familiar mode of expression which would seem to be sanctioned by the Philosopher in his *Nicomachean Ethics*, (L. 1, c. 13)—; and allows that the former remain and energize after death, because they are in the soul as in their Subject. Then he goes on to say: 'There are, on the other hand, certain faculties that are in the composite' (or rather, in the two together, that is, in soul and body) 'as in a Subject; and of such sort, are all the faculties of the sensitive and nutritive part. Now, on the destruction of its Subject, the accident cannot remain. Hence, on the corruption of the composite or conjunct, these faculties do not remain in act; but only remain virtually in the soul, as in their principiant and root[2].' The precise meaning of these last words he interprets for us in another place. 'These faculties are said to remain,' he observes, 'in the separated soul as in their root, not that they are actually in it; but because the separated soul is endowed with such virtue that, if it should be united to the body, it could again cause these faculties in the body as it could also cause life[3].' Once more: 'The faculties of the soul are

[1] 'Respondeo dicendum, quod illud est subjectum operativae potentiae quod est potens operari: omne enim accidens denominat proprium subjectum. Idem autem est quod potest operari, et quod operatur. Unde oportet quod ejus sit potentia sicut subjecti, cujus est operatio, ut etiam Philosophus dicit in principio lib. *de Somno et Vigilia*. Manifestum est autem ex supradictis, qu. 76, art. 1, ad 1, quod quaedam operationes sunt animae quae exercentur sine organo corporali, ut intelligere et velle. Unde potentiae quae sunt harum operationum principia, sunt in anima sicut in subjecto. Quaedam vero operationes sunt animae quae exercentur per organa corporalia, sicut visio per oculum, auditus per aurem; et simile est de omnibus aliis operationibus nutritivae et sensitivae partis. Et ideo potentiae quae sunt talium operationum principia, sunt in conjuncto sicut in subjecto, et non in anima sola.' 1ae lxxvii, 5, *c.*

[2] 'Quaedam vero potentiae sunt in conjuncto sicut in subjecto, sicut omnes potentiae sensitivae partis et nutritivae. Destructo autem subjecto, non potest accidens remanere. Unde corrupto conjuncto, non manent hujusmodi potentiae actu, sed virtute tantum manent in anima sicut in principio vel radice.' 1ae lxxvii, 8, *c.*

[3] 'Hujusmodi potentiae dicuntur in anima separata remanere ut in radice, non quia sint actu in ipsa; sed quia anima separata est talis virtutis ut si uniatur corpori, iterum potest causare has potentias in corpore, sicut et vitam.' *Anima*, *a.* 19, 2m.

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not its essential or integral, but *potential* parts[1].' From the doctrine to be collected from these passages, then, we are entitled to conclude, (i) That the soul is *virtually* a vegetative as well as an animal form to the body. But these two constitute what is called the inferior part of the soul, by which alone it is fitted to inform the body. Wherefore, as actuating Matter and as substantially united to the body as its form, the soul is *virtually* capable of quantitative information; that is to say, in so far as it is virtually equivalent to the vegetative and animal forms. Further: The lower faculties of the soul are properties; yet they inhere in the bodily organ as in their partial Subject. But they can only inhere there *as* accidents; for they are accidents in their own nature, and are altogether extraneous to the substantial entity of the body. Moreover, they inhere in their respective organs; all which presupposes the substantial information of Matter. Consequently, they inhere in quantified Matter; and so intimately, that they cease to exist when separated from their organ. Therefore, they are somehow informed by quantity; for all qualities, (and they are of the second species of quality), inhere in Matter through the medium of quantity. But these faculties emanate from the soul and are potential parts of it. Hence, (ii) We have a right to conclude that, according to the teaching of the Angelic Doctor, the soul is *potentially* capable of being informed by quantity. (iii) Lastly: St. Thomas says that 'the shape of the body comes from the soul[2];' if so, likewise the quantity. Indeed, he expressly says as much in passages already quoted. Therefore, Matter is not informed by quantity previous to its information by the soul. Therefore, quantity informs the complete composite; but the body formally, the soul virtually and potentially.

[1] 'Potentiae animae non sunt partes essentiales, vel integrales, sed potentiales.' *Ibidem*, 4[m].

[2] 'Potius figura corporis est ex anima.' *Spiritu. a.* 4, 9[m].

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§ 4.

CAN ONE ACCIDENT BE THE MATERIAL CAUSE OF ANOTHER?

PROPOSITION CLXX.

One accident can be the proximate Subject of another accident and, consequently, can exercise a proper material causality in relation to it.

This Proposition has been already established incidentally during the discussions of the previous Section. It needs exposition, therefore, rather than proof. Accordingly,

I. It is stated in the Enunciation, that one accident can be the *proximate* Subject or Material Cause of another accident; because it is impossible that it should be the *ultimate* Subject. The reason is plain. If any accident could be an ultimate Subject, it would *ipso facto* cease to be an accident. For a natural tendency to inhere in another as in a Subject is of the essence of an accident. If, therefore, an accident could *naturally*, (for of supernatural acts there is now no question), be the ultimate Subject; it would have no such natural tendency. But this means that it would not be an accident.

II. Accident can be the proximate Subject of another accident; that is to say, it may be necessary that substance should be first informed by one accident, in order that, by this accidental composition, it may be capable of mediate information by another accident. Thus, for instance, in order that a body may be capable of becoming *hot* or *soft*, it must first be extended and therefore informed by quantity. Imagine, if you can, *a mathematical point exhibiting degrees of heat or becoming palpable.* In like manner, a *superficies* is a prerequisite of *colour;* but superficies is a species of continuous quantity. The same may be said of *shape*, and of qualities in general.

III. Not every accident can proximately inform another accident,—in other words, can inform substance through the medium of another accident. The reason is that, in the order of accidental forms, there must necessarily be a *first* or *last*, (according to the chosen starting-point for the analysis), which immediately inheres in substance. That first or last, in material substance, is quantity.

IV. So far all is plain and beyond controversy in the School. But now there arises a question, about which opinions are somewhat

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divided. It is mooted and decided in the second Member of our Proposition, wherein it is declared that *one accident can exercise a proper causality in relation to another accident.* It may be as well to add that this resolution of the problem claims the authority of the greatest Doctors of the School in its favour. The question, then, is this: Is the accident in which as in a Subject the other accident inheres a mere necessary condition, as it were, of the inherence of the latter in substance; or is it the partial Material Cause, exercising a real causality, as Subject, in the subsequent accidental composite? To set the question in the phraseology of the School:—Is the said accident Subject only *ut quo*, or rather *ut quod?* If we examine the point by the light of experience, assisted by the nature of the accidents themselves; there will be little difficulty in coming to a right conclusion. Let us take a few instances, beginning with the accidental mode of *figure* or *shape*. It immediately inheres in quantity; and mediately by means of quantity in bodily substance. Does it, or does it not, inhere in quantity as a true, though partial, Material Cause? Let us see. It is, absolutely speaking, capable of separation from the substance; because quantity is separable from the substance. The Omnipotence of God could preserve the material substance without quantity, and quantity without the material substance. In the former case the material substance could have no shape. All this is possible; because there is no metaphysical repugnance. But can I even conceive figure or shape as separable *de potentia absoluta* from quantity? There is a metaphysical impossibility in the way. Experience has proved to us that a body may often change its shape; but it never does so without changing its quantity. It is plain, then, that the dependence of shape on quantity is more intimate and, in one way, more absolute than its dependence on substance. Therefore, we are justified in concluding that quantity exercises a real causality in the instance of shape. Much the same may be urged touching the accident of *ubication*, or local presence. It is impossible to conceive a definite occupation of space without extension. When we turn to spiritual accidents, the evidence becomes much stronger. Take a *habit*. In order to fix the mind to some definite instance, let us select *honesty*. A habit, as we know from ethics, is a certain quality by which a faculty is enabled to act with ease and promptness when occasion offers. Honesty is, of course, in the will. It is, therefore, a spiritual quality inherent in the will, by

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which a man is enabled with ease and promptness to act justly with his neighbour whenever occasion offers. Now, the will is an accident,—that is to say, the *facultative* will,—for it is a property of the soul. Therefore, this accidental quality,—the habit of honesty, to wit,—inheres immediately in another accident, the faculty of the will. Is it possible for any one to maintain, that the will exercises no material causality in relation to the habit, bearing in mind the way in which habits are formed? Another instance would be science, or the scientific habit. Would any one venture to say that the intellect is only a necessary condition, in order that science may be able to inhere in the soul; or that it exercises no material causality in regard of that habit? The *à priori* reason why the faculties exercise a material causality in regard of their habits, is this; that habits are ordained as helps to those faculties of which they are the habits. But a yet clearer instance is to be found in the acts of the faculties,—the immanent and vital acts more particularly. These immediately inform the faculty which elicits them, and through the faculty the soul. Here, if anywhere, it is plain that the accident, acting as immediate Subject really *in* itself,—though not *by* itself,—sustains the accidental act. Who could be persuaded to believe that the intellect was a mere *condition* of the presence of a thought in the soul?

§ 5.

Can simple or spiritual substance be Material Cause of accidents?

PROPOSITION CLXXI.

It is not in the nature of spiritual substance to admit a Material Cause of which itself is intrinsically composed.

This Proposition needs no proof; for spiritual substance is immaterial.

PROPOSITION CLXXII.

Spiritual subsisting, or complete, substance can be the Material Cause of accidents proportioned to its nature.

This Proposition is thus declared. There is only one Spirit Who is infinitely perfect, infinitely simple Act, and Whose Nature excludes all whatsoever conceivable potentiality. Supposing, then,

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for the moment, (the truth of the supposition will be afterwards demonstrated in its place), that there are other Spirits finite and created; they will be to a certain extent potential and, consequently, capable of accidental perfectionment. There must be potentiality of some sort in them; otherwise, they would be pure act. This they cannot be, if finite and created: it is a contradiction in terms. A finite being cannot be infinite; nor can an imperfect being be perfect. But a being who is pure act is infinite and infinitely perfect. To continue:—Since they are Spirits, their potentialities would be active. These would be faculties;—the two faculties of intellect and will. These two faculties would be capable of repeated acts and of habits of acts. Hence, they would be capable of information by spiritual accidents; from which would arise an accidental composition or, as St. Thomas discriminately calls it, *conjunction*. So much will suffice at present touching this most interesting question; for it will recur, when we come to treat of the Category of Substance.

PROPOSITION CLXXIII.

Spiritual form, although an incomplete substance, is capable of being the Material Cause of accidents proportioned to its nature.

This Proposition is proved by the same arguments as those which have been adduced in the preceding Thesis. The only instance of such a form, so far as we know, is the soul of man. There has been occasion more than once, in former Sections, to enter into an examination of these accidents; so that it will be unnecessary to go over old ground. The faculties of the human soul are accidents; and the habits and acts of those faculties are accidents. This is most clearly demonstrable in the case of acts. For an accident is that which can come and go, while the substance or essential nature remains untouched. But thoughts, acts of the will, sensations, imaginations, acts of emotion and passion, come and go and come again; while self,—the *ego*,—remains as it was and ever will be.

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CHAPTER III.

THE FORMAL CAUSE.

ARTICLE I.

Form in general and its divisions.

Since all our ideas are originally derived from those objects which are subject to the perception of the senses, and since words are the symbolical expression of ideas; it cannot but be, that a study of the sensile objects which gave to the words their primitive meaning should assist us towards forming a clearer concept of those more recondite realities, to the representation of which the same words have been subsequently applied. This observation notably applies to the subject-matter of this and the preceding Chapters. Let us begin, then, by looking at Form from this point of view.

It may be reasonably concluded that the term *Form*, in its primitive signification, was chosen to express the outline of bodies; indeed, this meaning of the word remains in common use to the present day. Thus, we speak of the beautiful form of a crystal, of a beech-tree, of a swan, of a greyhound. It was also applied afterwards to productions of art. Thus, it is said of a table or other piece of furniture, that its form is convenient,—of an arch, that it is well-formed,—of a lamp, that its form is light and graceful,—of a statue, that its form is in exquisite proportion. In both classes of instances the word expresses something perceptible to the senses. Let us examine the two separately, and assume a crystal as our instance of a natural form, or shape.

Before us, let it be supposed, there lies a specimen of *quartz*. It appears under the form of a hexagonal prism, terminated by hexagonal pyramids. The substance, quartz, we call the matter;

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while the hexagonal prism, terminated by hexagonal pyramids, is the form. Try to imagine the quartz without any external form whatsoever: it would become an indeterminate something scarcely perceptible by the senses. For the qualitative accidents,—colour, to take an instance,—require and presuppose a superficies; and a superficies physically connotes a form, or shape, of some sort. The form, then, may be said to practically render it actual to sense. Again: Supposing it possible that the existing lump of quartz should be deprived of all shape, it would be perfectly indeterminate, indifferent, to one form more than another,—that is to say, within the limit of those crystalline forms that quartz assumes. Its form, then, determines it to one; and it is incapable of other forms for so long as its hexagonal form continues. Moreover, from the time that it first became a quartz-crystal, it had this hexagonal form by virtue of which it is *de facto* a crystal. Once more: The form of the crystal is in no slight degree indicative of the specific mineral; so that in many cases a practised mineralogist would be able from it to draw a comparatively safe conclusion as to the nature of the specimen. It is true that the form alone is not always a sufficient indication, because it may be common to more than one mineral; consequently, it will be necessary for him perhaps to take likewise into account the colour, refractive power, cleavage, hardness, even the taste. But still, after all, the form would be of prominent service in enabling him to determine the species. Thus, the oblique rhombohedral shape oft he crystal, combined with other indications, justifies the judgment that he is in presence of a specimen of *Iceland-spar;* and the oblique octohedra or long prismatic needles, together with the yellow colour, tell him that he is fingering a *sulphur* crystal. Similarly, the cubical form, together with the peculiar taste, assures him that he is dealing with *salt.* In the instance of living things, however, the external form determines much more clearly and independently to a sensile cognition of the species. For, as St. Thomas remarks in a passage quoted in the preceding Chapter, the external form is indicative of the species. A bird has one kind of shape,—a fish, another,—reptiles, another,—quadrupeds, another. Any one can tell by the outline, whether the being we are looking at is a cat, or a swan, or a serpent, or a salmon, or a plant; even prescinding from colour, height, &c.

If we now pass on to artificial entities,—that is to say, to objects

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which have been fashioned by the hand of man,—the analysis will afford still more satisfactory results. A carpenter has in his shop, (we will say), a block of mahogany out of which he makes a round table. The mahogany is the matter, the table-shape is the form, of this piece of furniture. Now, it is plain that this mass of wood, before the carpenter began upon it, was capable of being made into anything. It was equally capable of being made into a chair, of forming a side-board, or a wardrobe, or a chest of drawers, or a balustrade, &c. Further, in its primitive unformedness it was of itself indifferent to whatsoever shape. Now, however, that the carpenter has impressed upon it by saw, chisel, and plane, the form of a round table, it is determined to one shape; and for so long as it continues to be a round table, it is incapable of receiving any other shape. If it is turned into something else; this can only be done at the expense of the table-form. It cannot at once be a table and a chair. Again: That piece of wood was from the first capable of receiving the table-form, like any other; in other words, it was in potentiality to that form. When the workman's labour is completed, it is in actual possession of the form; and the table is in act. Once more: This table-shape was antecedently communicable to other kinds of wood, to stone, to marble, and the like; it is determined to this individual table by the piece of mahogany that it actually informs. Yet again: The wood and the shape together constitute the table which is the composite artificial entity. Again: This table-form cannot exist outside its wood; neither is it that which is made, nor is the wood that which is made, but the table. Wherefore, the table is made out of the piece of wood shaped in such a manner. Finally: You know the nature of the piece of furniture, the purposes for which it serves, its so-called proper operation, from its form. No one for an instant would imagine that it was made to sit down upon, or to hang up dresses in, or to serve as fence to a staircase. It is evidently intended to support plates, books, and the like.

From the above analysis of these primitive uses of the term, *Form*, we may gather the principal characteristics of the same in its relation to its Subject, which form the foundation of its specific meaning in Metaphysics. i. The Subject, or material cause, is that element in the constitution of composites, which is indeterminate, indifferent, potential; yet determinable, capable of differentiation and actuation. So much we have seen in the

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preceding Chapter. ii. The Form is that other element which determines, differentiates, actuates the matter. iii. Out of the union of these two arises the composite. iv. Neither the Form nor the matter is made, but the composite; though the composite is made to be that which it is by virtue of the Form, principally at least. v. The Form is of itself communicable to many matters, or Subjects, and is individually determined by the Subject. Hence, prior to its existence in the Subject, it is a universal. vi. The Form determines the specific nature of the composite. vii. It is the source of the natural operation of the composite, proportionately to its nature. viii. It cannot, however, naturally exist outside of the composite. ix. A plurality of Forms specifically the same in one and the same Subject is impossible.

There is another term that will occur over and over again in the present Chapter; and it is therefore proposed to submit it to a like analysis. There can be little doubt that the word, *act*, was originally employed to express a human deed,—something done by a man. Indeed, this continues to be its signification in ordinary speech. *In fieri*,—that is to say, during the course of its production,—it is commonly called *action; in facto esse*,—that is to say, in its completed production which is the term of motion,—it is properly speaking *act*. Thus, to give an example, the blacksmith is at his forge hammering a bar of iron on the anvil. The seizure of the hammer, the swing of the arm, are *action;* the blow inflicted on the iron is the *act*. So,—to take another instance,—a man resolves to draw up his testament. The deliberation about it, the weighing of motives for and against, the seeking for advice, are the *action;* the final determination is the *act*. Now, let us proceed to analyze this second instance. It is sufficiently plain that the supposed person could not have made up his mind, as it is called, unless he had a free-will;—in other words, unless he had in his soul a power, or faculty, of freely choosing. What, then, is there observable about this faculty, or active power, before the idea of making his testament came into the man's mind? Evidently enough, it was in a complete state of indifference and indetermination with regard to the said testament. Let us further suppose, for the sake of making the matter more clear, that this determination to make his testament is the first choice the supposed testator has ever made in his life. In such case his will up to this time has been purely facultative, or—as it might be otherwise

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expressed—in simple potentiality. He has a will, but he has never used it before. In that previous time his will was capable of choosing anything and was indifferent to everything. Further: In itself it is an imperfect entity, and useless so long as it remains merely what it is. But the question of the testament turns up; and the human will is set going. It decides in favour of making the testament. We will now look at it, as it appears in its completed election. There is something new in the will, which was not there before. The faculty is *in act.* It has become perfected, and has in a certain sense attained to the fulness of entity which its nature admits. At the same time its previous condition is changed. It has so far lost its indetermination, and is determined to one. It is no longer indifferent, so far as the drawing up of the testament is concerned; and, provided that the purpose remains unchanged, it is individually completed. If there should be a change of purpose, it will be by virtue of a new act. In like manner, the blacksmith, —to recur to the first example,—has a muscular power in his arm; and he might put it to service in a multitude of ways. He might fell trees, or carry burdens, or train for a pugilist, or go through his drill as a soldier, or exhibit as an acrobat, or take to ship-carpentering, as to a multitude of other things. One thing is certain; that, till he employs it in some way or other, his strength of arm is of little use to him. As a fact, however, he uses it on his anvil. It comes into act; and by the act is determined in one particular direction. Moreover, the bodily faculty is perfected by something within itself added to itself, and may be said to exist in the natural fulness of its entity.

Let us collect what has been learnt by this analysis. i. In all created things act and potentiality are correlatives. A potentiality supposes an act as natural term of its perfectness; an act supposes a potentiality as that from which it must spring and in which it must inhere. ii. The potentiality by itself is indeterminate, indifferent, imperfect, as it were dimidiate being; having a natural inclination towards its act, forasmuch as every entity naturally tends towards its own perfection. iii. The act is perfective of the potentiality, and determines it to one. iv. The act specifically informs the potentiality,—that is to say, it reduces the latter in one way or other under some particular species. v. It must be borne in mind, however, that there is a considerable difference, even as touching the present comparative analysis, between a

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passive, and active potentiality such as we have been contemplating. The difference will be seen more plainly as we advance in this Chapter.

Such, then, are the principal elements that constitute the transcendental concepts of *Form* and *Act*.

PROPOSITION CLXXIV.

Every Form is an act.

Prolegomenon.

As St. Thomas declares in passages quoted during the course of the preceding Chapter, there are two acts common to every entity. These go by the names of the first and second acts. The first act is that of being. Since all finite entities were once not-being, but capable of being; they were in potentiality to being. That potentiality is determined by the act of existing. (In the Infinite Being there is no such potentiality; accordingly He is pure Act, and first and second Act in One). Such is the first act. Again: Every entity, once constituted, is determined to a proper and specific operation by which it naturally tends towards its constituted end. This is the second act; and it is called second, because a thing must first exist, in order to energize. The Angelic Doctor in the following passage explains the division, as it might seem at first sight, after a somewhat different manner. 'The act of a Form,' he remarks, 'is twofold. One is operation,—as, for instance, to impart warmth,—which is the second act. Such act is attributed to the supposit of the Form,'—that is to say, to the integral, subsisting, substance. 'But the other act of a Form is the informing of the matter, which is the first act;—as, for instance, to quicken the body is the act of the soul. Such act is not attributed to the supposit of the Form[1].' It is easy to see, however, that St. Thomas is here speaking of the twofold act of the Form; whereas in the present Prolegomenon it is question of the

[1] 'Duplex est actus formae. Unus qui est operatio, ut calefacere, qui est actus secundus; et talis actus formae supposito attribuitur. Alius vero actus formae est materiae informatio, quae est actus primus; sicut vivificare corpus est actus animae; et talis actus supposito formae non attribuitur.' *Verit. Q.* xxvii, *a.* 3, 25[m].

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twofold act of an integral entity. Nevertheless, a little consideration will serve to show that the respective divisions exactly correspond. For, in composite substantial entities the supposit, (which is no other than the integral substance perfected in its subsistence), is constituted in its essential Being by the formal actuation of the matter. Similarly, the constitution of the accidental composite is no other than the information of the substance by its accident. This is the first act, which is *existential.* As soon as the composite has been perfectly constituted in being, it commences its natural operation which is founded in the Form. This is the second act, which is *operative.*

I. The Proposition is, first of all, proved *generally.*

That which determines a potentiality to its act, completes its entity, gives to the composite its specific nature, and is principiant of its proper operation, (understanding the terms, *specific nature* and *proper operation*, in all the latitude of their relation to whatsoever composite), is truly and metaphysically an act. But every Form determines a potentiality to its act, completes its entity, gives to the composite its specific nature, and is principiant of its proper operation. Therefore, etc. The *Minor* is evident from the previous analysis of the concept of Form, and will be confirmed in the second proof.

II. The Proposition is further declared by a separate examination into the nature of each of the different classes of Forms.

Note. It will here be necessary to anticipate the various divisions of Forms given at the end of this Article.

i. The Proposition is verified in the instance of Forms that enter into physical composition with their respective Subjects. *a.* We will begin with a consideration of the substantial Forms of bodies. The Subject of such Forms,—that out of which they are evolved, in which they inhere, and by which they are sustained,—is primordial matter which, as we have seen, is a pure passive potentiality. The substantial Form determines, actuates it, and gives to the substantial composite, constituted by the two, its specific entity and natural operation. But this precisely is, to be an act; forasmuch as it evolves the potentiality of matter into its first, and the composite or supposit into the second act. *b.* The same may be said proportionally of accidental material Forms, which likewise enter into physical composition with their Subjects. For, though the Subject of an accidental Form is not a pure

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potentiality since, on the contrary, it is presupposed as constituted in the perfectness of its substantial nature; nevertheless, it is a pure potentiality in relation to the accidental Form,—that is to say, it is capable of receiving it, or of receiving its opposite, or of receiving some other accidental Form distinct from it within the limits of the same species. By the information of the accidental Form such potentiality is reduced to act; and the Form determines it, not simply to *be*, (for *this* it is already), but to be specifically such or such—for instance, white or red or black, moist or dry, hard or soft, square or round, and the like. By the accidental Form, therefore, the substantial entity is perfected, not in its subsistent substantiality, but in its adventitious complement of being; and the substantial Form is endowed with instruments or organs, as it were, by means of which it may be enabled to exercise its operations on entities outside itself. *c.* The same remarks apply, as is plain, to modes either substantial or accidental.

ii. The Proposition is also verified of immaterial, or spiritual, Forms which do not enter into physical, but only into metaphysical, composition with what may be considered as their Subject.

a. Let us consider, first of all, finite spiritual Substances. These pure Intelligences are called Forms, not because they physically inform as material Forms do; but because they are complete specific natures in themselves, definite, determined to perfectness, sources to themselves of their natural operation. Consequently, as Forms they connote no physical Subject; as acts, no really distinct passive potentiality. Such connotation in the instance of substantial Forms, (and with these alone we are at present concerned), is limited to those which are material. Hence, at first sight it might appear as though not physical alone, but even metaphysical, composition and a metaphysical Subject were excluded; since these Forms are, really, so to say, their own Subject. An examination of this apparent difficulty is necessary to an adequate declaration of the present Thesis, and will serve to throw light on certain difficult words of the Angelic Doctor, which are not to be understood without some labour of thought. Since every finite entity has being by participation,—that is to say, is not cause of its own being, but receives it from another; there is always room for a real, though metaphysical, distinction between its essence and its existence. It is for this reason that contrary attributes are respectively predicable of the two, as has been pointed out in a preceding Book. Conse-

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quently, the two may be mutually considered, each relatively to the other, as alternately Subject and Form, potentiality and act. To explain:—We may consider the participated existence of any finite entity in one of two ways, viz. either as actually conferred, or as conceptually belonging to the nature. If we regard it as actually conferred, existence will be the first act, physically speaking, of the thing. As a fact, antecedently to its creation, its essence is in objective potentiality, and is reduced to act by its real production. This doctrine holds equally good, whether the substance be material or spiritual, and whether the entity be substance or accident. It is on this subject that St. Thomas has the following remarks. 'It is manifest that the First Being, Who is God, is infinite Act; inasmuch as He has in Himself entire plenitude of Being, not contracted to any generic or specific nature. Hence, it is of necessity that His very Existence should not be existence implanted, as it were, in some nature which is not His Being or Existence; because in this case it would be terminated, or limited, to that nature. Hence we say that God is His own very Being. But this cannot be said of any other. . . Everything, therefore, that comes after the First Being, seeing that it is not its own being, has been received in something, by reason of which its said being is contracted. Thus, in every created thing the nature of the entity which participates in being is one thing, and the being itself that is participated is another. Moreover, since everything participates in the First Act by assimilation, inasmuch as it has being; it follows of necessity, that the participated being in each and every entity may be compared to the nature which participates in it, as act to potentiality. Wherefore, in the nature of corporeal things matter does not participate in being of itself, but by virtue of the Form; for the Form informing the matter, makes it actual, as in the instance of the soul informing the body. Accordingly, in composite entities we may contemplate a twofold potentiality and a twofold act. For, first of all, matter is as a potentiality relatively to the Form; while the Form is its act. Again: The nature, constituted of matter and Form, is as a potentiality relatively to simple being,' (existence); 'forasmuch as it is capable of receiving being. Supposing, then, all foundation of matter removed; if there remains any Form of a determinate nature subsisting of itself, not in matter, it will still be compared to its being,' or existence, 'as potentiality to act. I do not say, as a potentiality separable from act, but, as one that

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is ever accompanied by its own act. After this manner, the nature of spiritual substance, which is not composed of matter and Form, is as it were a potentiality relatively to its own existence; and so, in spiritual substance there is a composition of potentiality and act and, consequently, of Form and matter, always supposing that every potentiality may be called a Form. But this, nevertheless, is not a proper mode of expression according to the common usage of terms[1].' It must be owned that the above passage stands in need of explanation; for it is very hard for those to understand, who are not well acquainted with the teaching of the Angelic Doctor. Wherefore: St. Thomas first of all remarks that Being and being, (that is to say, Essence and Existence), are absolutely identical in God; so that there is no place for even a metaphysical distinction. The reason is, that He has in Himself, and is, Plenitude of Being. If it were not so, He would not be God. For if His being, or Existence, were imbibed (so to say) in any specific nature, It would be limited to that nature; consequently, He would be neither infinite being nor infinite Being. From this it follows, that His Essence is His Existence, and His Existence His Essence. But all finite beings exist by an existence in which they participate from God, and are by their derived existence assimilated to the infinitely

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[1] 'Manifestum est enim quod primum ens, quod Deus est, est actus infinitus, utpote habens in se totam essendi plenitudinem, non contractam ad aliquam naturam generis vel speciei. Unde oportet quod ipsum esse ejus non sit esse quasi inditum alicui naturae quae non sit suum esse; quia sic finiretur ad illam naturam. Unde dicimus, quod Deus est ipsum suum esse. Hoc autem non potest dici de aliquo alio.... Omne igitur quod est post primum ens, cum non sit suum esse, habet esse in aliquo receptum, per quod ipsum esse contrahitur. Et sic in quolibet creato aliud est natura rei quae participat esse, et aliud ipsum esse participatum. Et cum quaelibet res participet per assimilationem primum actum inquantum habet esse; necesse est quod esse participatum in unoquoque comparetur ad naturam participantem ipsum, sicut actus ad potentiam. In natura igitur rerum corporearum materia non per se participat ipsum esse, sed per formam; forma enim adveniens materiae facit ipsam esse actu, sicut anima corpori. Unde in rebus compositis est considerare duplicem actum et duplicem potentiam. Nam primo quidem materia est ut potentia respectu formae, et forma est actus ejus; et iterum natura constituta ex materia et forma, est ut potentia respectu ipsius esse, inquantum est susceptiva ejus. Remoto igitur fundamento materiae, si remanet aliqua forma determinatae naturae per se subsistens, non in materia; adhuc comparabitur ad suum esse ut potentia ad actum. Non dico autem ut potentiam separabilem ab actu, sed quam semper suus actus comitetur. Et hoc modo natura spiritualis substantiae, quae non est composita ex materia et forma, est ut potentia respectu sui esse. Et sic in substantia spirituali est compositio potentiae et actus, et per consequens formae et materiae; si tamen omnis potentia nominetur forma. Sed tamen hoc non est proprie dictum secundum communem usum nominum.' *Spiritu. a.* 1, *c.*, v. fi.

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Self-existent. Hence, their specific nature, or essence, is in a certain true sense a potentiality relatively to existence; since themselves might never have been, and once were not. When any one of these entities is produced, something begins to exist;—in other words, existence is received from the First Cause by something. *That something* is,—can be,—nothing else save the nature, or essence. Thus the nature in the instance of finite beings can be compared to its received existence as a potentiality to its act. It is determined to be by its being. It follows that there is a real foundation for conceiving finite entities as metaphysically composed of nature and existence. Consequently, bodies, or physically composite substances, exhibit a twofold potentiality and a twofold act. For there is primordial matter as the first potentiality; and the substantial Form, as the first act. In addition, there is the composite nature, made up of matter and Form, as the second potentiality; and existence, as the second act. The former are physical; the latter, metaphysical. Now, pure spiritual finite Forms cannot exhibit the first potentiality and the first act; but they include the second. Hence, their specific nature is as a potentiality to the first act of existence; and their existence is the first act. But, on the other hand, the specific nature is the metaphysical Form, and the existent supposit is the Subject; consequently, the Form must be the potentiality and the Subject the act. This, however, is an entire inversion of the order. It is the act, as we have seen, which answers to the Form, because both are determining and perfecting; while the potentiality answers to the Subject, since both are indeterminate and receptive of perfection. Accordingly, St. Thomas takes care to point out, that it is contrary to the established usage in philosophy to call a potentiality a Form. Here it is that the special difficulty occurs. Now, cannot this divergence be reconciled? Let us see.

As has been remarked before, there are two ways of regarding the existence of finite entities. The one is, to consider it as *actually* conferred in such wise that the entity really exists outside its causes. It is thus we have hitherto contemplated it. But it may likewise be considered conceptually or metaphysically,—that is to say, we may conceive of the entity as existentially complete, as though existing,—just as people speak of *the coming man.* Thus the entity is considered as a subsistence, or supposit, which is substance in its ultimate completorial perfection. So considered, the conceptual existence, or individuation, or rather the supposit, (which

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is how the substance would naturally be, if it existed), may be regarded as the Subject, and the specific nature as the Form. It is precisely this latter which is commonly called the metaphysical Form, as we shall see later on. Finally, St. Thomas seems to admit a further division of act into firstly first, secondly first, and second acts;—the firstly first, the Form; the secondly first, existence; the second, operation. For, though the division occurs in an objection, he implies assent to it in his answer [1]. In this way spiritual Intelligences are in themselves the first, are determined to the second, and are principiants of the third. From the above exposition it is concluded that, however the metaphysical composition of spiritual substances may be conceived, it always remains true that these pure Forms are acts.

b. Let us now turn to spiritual accidents. That there are such accidents, no one can doubt who has looked into the workings of his own soul. For we are conscious that there are thoughts daily passing through our mind and choices proceeding from our will, which come and go while we remain substantially the same. They are not *we*, but *in us*. They are the terms respectively of the faculties of intellect and will. Now, these faculties are potentialities, indifferent, indeterminate. They are determined, one by the thought, the other by the volition; and thought and volition are accidental Forms. Consequently, these accidental Forms are acts. It is precisely the same, of course, with the thoughts and volitions of pure Spirits.

c. Finally, logical Forms in proportion to their nature are likewise acts. For the *matter* of a thought,—all that in it which is representative of the object,—is in itself indeterminate and capable of receiving any *Form* of thought; hence, the apposite adoption of the two names in logic. Let us suppose, by way of illustration, the sensile perception of a *horse* awakened in the soul; and that it becomes a subject of thought. It is plain that the sensile perception and its object are indeterminate, and indifferent as to how they are conceived, whether under the Form of a simple idea or of a Judgment, in the abstract or concrete, as a universal or a singular or a particular, as a source of induction or deduction. The mind cognizes it under one or other of these logical Forms, which actuates, determines, the concept.

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[1] *Verit. Q. v, a. 8, obj. 10.*

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III. The truth of the Proposition is confirmed by the authority of St. Thomas. 'As operation or action,' writes this Doctor, 'which is the complement of active potentiality corresponds with active potentiality; so, that which corresponds with passive potentiality as its perfection and complement, is called act. Wherefore, every Form is called act, even separated'—that is, spiritual—'Forms themselves; and God, Who is the Cause of all perfection, is called First and Pure Act[1].'

NOTE I. It is worth noticing, that the English word *act* is not an exact counterpart of the Latin *actus*, nor the English *action* of the Latin *actio*; as may be seen from the above quotation. In the present Chapter act is used in its strictly philosophical meaning. In the illustration of the blacksmith and of human operation, given in the analysis at the commencement of this Article, *act* and *action* are used in their English acceptation.

NOTE II. As St. Thomas declares in the quotation just made, God is Pure Act,—that is to say, He is Act that excludes all whatsoever potentiality. Wherefore, as the same Doctor points out, 'He is by His essential Nature Form[2].' But this entire question is reserved for the ninth Book.

NOTE III. Any notice of the exemplar Form has been omitted for a like reason.

PROPOSITION CLXXV.

Every Form is properly a cause, but proportioned to the nature of the composite.

PROLEGOMENON.

In the Enunciation the words, *but proportioned to the nature of the composite*, have been added, because evidently the causality of the Form must be determined by the nature of the composite. In physical composites the Form will be physical, and the causality

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[1] 'Sicut potentiae activae respondet operatio vel actio, in qua completur potentia activa; ita etiam illud quod respondet potentiae passivae, quasi perfectio et complementum, actus dicatur. Et propter hoc omnis forma actus dicitur, etiam ipsae formae separatae; et illud quod est principium perfectionis totius, quod est Deus, vocatur actus primus et purus.' I *d.* xlii, *Q.* I, *a.* I, I^m.

[2] 'Est igitur per essentiam suam forma.' I^a^ iii. 2, *c.*

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as a consequence physical. These are the primary objects of inquiry. In metaphysical composites the Form and therefore its causality will be metaphysical. Similarly, in logical composites the Form and its causality will be logical.

Declaration of the Thesis.

The Angelic Doctor gives a proof of the present Proposition, which shall form the text of its exposition. 'Now, we find in certain Forms,' he writes, 'a twofold relation; the one to that which is formed according to them,'—to wit, the composite,—'as, for instance, knowledge is related to him who has knowledge; the other, a relation to that which is external,—as, for instance, knowledge,—is related to the knowable. This second relation, however, is not common to every Form, as the first is. The term *Form*, then, imports the first relation only. Hence it is, that Form always denotes the relation of a cause. For a Form is in some sort cause of that which is formed according to it; whether the formation be by way of inherence, as in intrinsic Forms, or by way of imitation, as in exemplar Forms[1]. Hence, every Form is in one way or another a cause, even exemplar Forms.

It will be remembered, that in the second Article of the preceding Chapter cause was defined to be a principiant which essentially and positively communicates being to another entity, or which produces an existing essence other than its own. Wherefore, two elements are necessary and sufficient in order that an entity may be truly denominated a cause,—viz. a distinction between the cause and the effect, and moreover a communication of Being to the effect by the cause. Let us now apply the test of this definition to the various kinds of Forms.

1. We will begin with the physical composite and, first of all, with material substance; because the term, *Formal Cause*, is especially applied to this latter, as being its principal analogate and

[1] 'Invenimus autem in quibusdam formis duplicem respectum: unum ad id quod secundum eas formatur; sicut scientia respicit scientem; alium ad id quod est extra, sicut scientia respicit scibile. Hic tamen respectus non est omni formae communis, sicut primus. Hoc igitur nomen *forma* importat solum primum respectum; et inde est quod forma semper notat habitudinem causae. Est enim forma quodammodo causa ejus quod secundum ipsam formatur, sive formatio fiat per modum inherentiae, sicut in formis intrinsecis, sive per modum imitationis, ut in formis exemplaribus.' *Verit. Q.* iii, a. 3, c., *in f.*

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also because it is here that the truth of its causality is more plainly recognised. Wherefore, i. It is plain that the physical composite,—that is to say, the material substance, according to the present train of thought,—is an entity, or essence, really distinct from the Form; for the former includes, whereas the latter excludes, the matter. Furthermore, as will be explained at greater length later on, the material substance is that which is constituted; while the Form is that by which the material substance is constituted. In the instance of *man*, the reality of the distinction becomes most clear. For the human soul, which is his substantial Form, is not man; since the definition of man includes an organized living body of which the soul is the act. Similarly, the substantial principle of vegetative and of animal life in plants and irrational animals is not identical with the plant or animal itself; because it does not include the organized matter. The same is plainly to be seen in works of art; for no one would contend that a statue, for instance, is really the same as its form, since the former includes the marble as well. ii. Further: It is equally plain that the substantial Form positively communicates being to the material substance; as is clearly seen, if we compare a living entity with that same entity in death. The same is manifest *à priori*; for the Form actuates the matter and, by actuating the matter, constitutes the material substance. Therefore, it positively communicates being to this substance. iii. To these general elements, which are characteristic of all causes, may be added by way of supplement that which is peculiar to the material and formal causes,—viz. that the causality is intrinsic. This is equally evident; since the Form, like the matter, is a real physical part or component of the substance.

The same three characteristics are verified in the instance of accidental Forms, proportionately to the imperfection of their nature. For, i. Accidental Forms are really and entitatively distinct from the subject which they inform. Thus, *whiteness* in a *white man* is something physically distinct from the substantial nature of man; otherwise, every man would necessarily be white. Similarly, to be *grey-headed* or *bald* is really distinguishable from the *old man* himself; if, it were not so, he would have been grey-headed or bald from his cradle. As a fact, accidents are repeatedly changing in one and the same Subject. Thus, living things are obnoxious to constant change in height, size, shape, colour, and the

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rest. In like manner, the same *volume of water* is now cold, now hot; the same *bar of iron* is hard at one time, soft at another. But these things could not be, unless these accidents were physically distinct from their subject. ii. The accidental Form positively communicates being to the accidental composite,—in other words, to the integral entity composed of the substance and its accident. For the substance has received something real which it had not before, as in the instance of warm water; or it has at the first received something real which is an addition to its own essential nature. Thus, a dog in its specific essence is indifferent to any particular colour. *This* dog is *black and tan*; and such particular accidental Form gives to it an additional perfection. The same is discernible in spiritual accidents. A thought, for instance, is a perfection,—immediately of the intellectual faculty, mediately of the soul. No one would maintain that he gained nothing by a fresh thought or volition. Yet it is not he; otherwise, whenever it came and went, he would come and go. iii. Lastly: The nature of an accident is of itself sufficient evidence that its causality is intrinsic; for it has an essential tendency to inhere in the Subject of which it is the accident. Hence the well-known description of accident, that it is *Being of Being* (ens entis).

2. Similar characteristics are proportionally discoverable in the metaphysical Form. For, if by process of intellectual abstraction we consider the supposit or person as the Subject and the specific nature as the Form; it is evident that the latter is at all events conceived as distinct from the former. Later on we shall see that there is a real minor distinction [1] between the two. It is no less plain that, thus conceived, the specific nature communicates a substantial perfection by which it is assimilated to a definite Prototypal Idea in the Mind of God, and receives its specific determination and perfection of nature. Lastly: It cannot be called in question, that this specific nature is intrinsic in the supposit. If, on the other hand, by metaphysical analysis we divide an essence into its material and formal parts,—speaking logically, into its proximate genus and specific difference; it will easily appear that the latter is conceptually distinct from the former, that it gives a real being to an entity conceptually distinguished from itself, and that it is intrinsic to such entity. Thus, for instance, *animal* in

[1] See Proposition LXV.

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man is only conceptually distinguishable from *rational*; though in themselves the two are really distinct. Now, taking *animal* and *rational* in the abstract, it is obvious that *rational* adds to *animal* a real perfection which the latter has not in its own nature; while *man*, which is the entity conceptually produced, (so to say), or constituted, is distinct from rational, which is the metaphysical Form. Once more: Evidently, in man *rational* is intrinsic in *animal*.

After a similar manner logical Forms, in proportion to their nature, exhibit the same three characteristics. They are distinct, as logical entities, from the matter of the thought, (all that is representative of the object); since the same object may be conceived under many different Forms. Furthermore: These Forms communicate a logical entity to the conceptual representation, which is a real perfection in its own order. Finally: Such Form is intrinsic in the idea or cognition.

Division of Forms.

I. All Forms are either *material* or *spiritual*. Material Forms enter into the composition of material substances, or bodies; spiritual Forms either subsist of themselves or qualify spiritual substances.

II. Material as well as spiritual Forms are either *substantial* or *accidental*. All bodily substances whatsoever are constituted by their substantial Form. Simple bodies and compound bodies whether inanimate or animate,—elements, plants, animals,—all have their substantial Form by which they are specifically what they are. *Spiritual substantial Forms*, with one exception, subsist in themselves and do not enter into intrinsic and substantial union with matter. Consequently, they are substances in every way complete. The one exception is the human soul, which is lowest among spiritual Forms; for, though a spiritual substance, it is created to inform a body. Hence, it is an incomplete substance in itself; since, in common with animal Forms, it possesses faculties of nutrition, growth, sense, imagination, passion, which it cannot reduce to act except by the help of organs of the body. *Material accidental Forms* are found in greater or less abundance, proportionally to complexity of structure, in all bodies. Aptitude to inhere in substance either immediately or mediately is a part of

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their essential nature. *Spiritual accidental Forms* inhere in spiritual substances, but do not enter into physical composition with their Subjects. Such are the faculties of the human soul and the respective acts of these faculties. Under accidents are included *modes*.

Each one of these just mentioned is properly and physically a Form.

III. *Metaphysical Forms* are conceptual, yet founded in reality. They are either the specific nature of an entity, conceived as informing and determining the supposit, or they are the specific difference, (as logicians would call it), actuating conceptually the proximate genus.

IV. *Logical Forms* are the moulds, shapes, or again laws, of thought. They go by the name of *Second Intentions*.

V. There are *Forms of inhesion*, such as are all those hitherto mentioned; and *Forms by imitation*, which are designated as exemplar Forms. Of the latter no account will be taken here, as they will have a Chapter to themselves.

VI. God is the Form of Forms,—absolute Form, because absolute Act. But He will not be directly considered in the present Chapter; because all such questions are reserved for the ninth Book.

In the following Articles of the present Chapter the principal place will be given to material Forms; for it is in them that formal causality primarily manifests itself. Wherefore, first of all will be established the existence, then the eduction out of the potentiality of matter, then the order, after that the causality, finally the unicity, of material substantial Forms. Next in succession will follow an inquiry into the nature of the metaphysical Form. After that will be treated the question touching accidental Forms, their causality, effects, eduction from the potentiality of their Subject. Lastly, the nature of modes will be considered, as inclusive of artificial Forms. Two Appendices will be added; the one, on the teaching of the Angelic Doctor concerning the genesis of the material universe; the other, on the signification of the terms, *Form, formal, formally,—matter, material, materially*.

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ARTICLE II.

The existence of material substantial Forms.

By a material substantial Form is understood one of the two intrinsic constituents of bodies, which informs and actuates the matter or second intrinsic constituent and, together with this latter, constitutes the material substance. Now, the first question that naturally occurs is this: Are there such things in the material world as these substantial Forms? It would obviously be useless to inquire with much labour and expenditure of time into their nature, causality, production, effects, and the like; if there should chance to be any scepticism as to their existence or reality. Hence the Schoolmen are wont to say, generally of any theme, that the primordial question is, whether there is such a thing, (*primo quaeritur an sit*); then afterwards comes the question, what sort of a thing it is, (*deinde quaeritur quid sit*). The first point, therefore, which we have to determine is, the real existence of these Forms in nature.

Previously, however, to entering on the proposed discussion, it will be of advantage to clear away two difficulties, one of which affects the legitimacy of the discussion, while the other indicates a doubt as to the possibility of proof.

First of all, it may be doubted whether the whole question bearing upon the material and formal causes properly belongs to the metaphysical science, and not rather to physics; since it really amounts to nothing more or less than an inquiry into the nature and constitution of physical entities. The last remark is true; but then it should be remembered, (as there has been occasion to notice more than once before), that the same reality can be the material object of more than one science, provided that the formal object is distinct,—in other words, provided that each science regards the material object from a distinct point of view. Now, physics contemplates material substances, accordingly as these are patent to sensile perception and are subject to experiment and observation; while metaphysics contemplates them in their essential nature, and in so far as they are included under the universal principles of Being. But among these principles no one, for reasons already stated, holds a more important place than the principle of causality in all the breadth of the term. Since, then, the material and

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formal causes are two out of the four; it is plain that an investigation of them must form a necessary part of metaphysics, whose alone it is to determine the essential nature of all causation. To this may be added that, since deduction has been almost banished of late years from the physical disciplines, we no longer possess that which may be strictly called physical science; consequently, it is more than ever incumbent on metaphysics to examine into, and determine these momentous problems. Lastly,—and this of itself is enough to settle the point,—the Philosopher discusses the question of these causes in his *Metaphysics* as well as in his *Physics*.

The other difficulty touches, as we have said, on the possibility of proving the existence of substantial material Forms. It is urged that we can know nothing certainly which is not patent to the senses. But it is universally admitted that both primordial matter and the substantial Form are altogether beyond the reach of the senses, and are only present to these through the medium of the accidents. For answer, it is granted that matter and Form are not objects of sensile perception, and that *of themselves* the senses exclusively represent the accidents of substance. But the *Antecedent* must be peremptorily rejected as utterly false. It simply ignores another and primary factor in the acquisition of human knowledge,—the intuitive faculty,—or else misapprehends its native operation. But an explicit refutation of this sophism would betray us into a purely ideological inquisition, which is outside the range of metaphysics. Let it suffice, then, to say, that the specific operations and properties of bodies are patent to the senses by the accidents; and that from these, by help of the principle of causality established in the fourth Book, it is comparatively easy to deduce the existence of these two intrinsic constituents of material substances. If, however, there should chance to be a reader of these Volumes, who refuses to acknowledge the interaction of secondary causes in natural phenomena, and still clings to the unphilosophic doubtings of Hume, let him spare himself the profitless labour of proceeding further in our company and retire within the limits of his professed agnosticism. Or rather let him employ himself in explaining to himself and to the common sense of his fellow-men, how on the principles of his adopted scepticism he can rationally account for the astronomical predictions of almanacs, for hereditary transmission and selection in physiology, for the computations of

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geological time and the formation of strata, for the distinction between brute matter and vegetable or animal life, and for the personality of human action.

PROPOSITION CLXXVI.

Substantial Forms exist in nature.

I. THE FIRST ARGUMENT in proof of the present Thesis is based upon the facts of consciousness and of experience. We are supremely conscious that there is something within us, which links on the past, (so far as memory reaches), to the present in such wise as to give us fullest assurance and certainty that each one of us, during the whole of that defined period, remains personally identical with his own self. This consciousness of personal identity does not forsake us even in our dreams. However strange and incongruous the phantasmata which have been awakened in the soul through the influence of material condition or otherwise, the *Me* invariably accompanies them. We never dream that we are not ourselves or without ourselves. It is always I,—not another,—that wend my way through dreamland. So imperative is this vital self-consciousness as to compel each of us with an irresistible impulsion to acknowledge as his own a long series of thoughts, words, and actions, which has been momently extending during a course of many years. In not a few instances men would be glad to rid themselves of the sense of responsibility, if they could; but they cannot. The spontaneous judgment cannot be driven from their mind,—'It was I thought this, I that said that, I that did so and so;' even though these facts have taken place many years before. Again: I am conscious of sensations, feelings, passions, imaginations, thoughts, volitions,—passing and repassing; and I know all along that they are mine. I am conscious of life, and it is *my* life. Moreover, I am conscious that I have a body or, at least, of internal modifications which are, as it were, echoes of a body. I feel pain, and local pain. I am conscious of local movement. I am out of breath. My senses help me. I see, feel, hear, myself; and the internal senses correspond with the external. I am sensible that I see myself; I feel that I feel; to speak and to hear are to me identical. Thus I come to know with a certainty

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which no philosophistic sophisms can weaken, that I have a body which is truly mine, and that, spite of changes about which physicists are copious, it has somehow or other been mine for so long as I can remember. I can even point to scars in it, that are the result of incidents in my childhood. Further: I am conscious that it functions at my will in many cases,—that its organs of sense, nutrition, locomotion, are organs by which I perceive, assimilate, move. It and all its parts are my exclusive possession. Yet I know that the matter out of which it was formed was not always mine, and that at my death, (when the soul leaves it), it will belong, for a time at least, to other material substances. Consciousness, then, testifies to the existence in myself of a *spiritual something* which is lord paramount,—source of life to the body,—cause of its specific nature,—origin of thought, will, feeling, sensation, imagination. But this same consciousness teaches me something more. I am intimately aware of certain psychical and corporal phenomena in myself, that are ever changing like the figures in a kaleidoscope. Thought succeeds to thought, volition to volition, sensation to sensation, passion to passion, smallness to size, colour to colour; for even these last, though immediate objects of sensile perception, consciousness refers to *me*. Of all these and the like I am conscious; yet I am equally conscious that the *me* remains the same through all such modifications, gathering all up into its own unity. The former are in no wise essential to my being; the *Me* is. Wherefore, this spiritual *something* is no mere accident,—whether function or act.

Such are the facts, which consciousness supplies, from which we may presently draw our metaphysical conclusion. Let us now betake ourselves to the common testimony of experience, which will afford a striking confirmation of the facts of consciousness. We find our fellow-men universally subject to the same impression as ourselves; and this their conviction about themselves we instinctively share with them. There is not one sane man that we come across through the whole current of our lives, who does not speak and act from day to day and from year to year with a certain and resistless conviction that it is *he*,—the same—, all the way through, and that all those word and acts are chargeable to him. Nor have we, his friends and acquaintances, any more doubt about the matter than himself. All the proceedings of social, civic, political, life are irremoveably based on this conviction. You could not

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justly hang a man for a murder committed many years before, unless you are sure that it was he, the same, who then did it. It would be positively cruel to put the executioner's rope round the neck of the mere temporary function of a brain-bladder. How could a tradesman claim the payment of a yearly account from his customer, if this latter were quite another individual from the one who had originally ordered the goods? His only chance would be to enforce ready-money transactions; and even then, he must be expeditious with his change and receipt, for fear lest the personality should be transferred in the interim. Yet, how has our friend or acquaintance altered from the time we first knew him! He was a youth then, with all the charms of life's spring-tide upon him. Now he is in declining years, with the furrows of care on his face and thin grey hairs upon his head. Then he was open; now reserved. Once he could run, and climb, and run with the foremost; now he moves slowly on with the help of a stick. His character and appearance have undergone a marked change; nevertheless, we do not entertain a moment's doubt of his identity with the companion of our boyhood. So, then, experience reveals the same two factors in human life as those to which consciousness bears witness; viz. a something permanent and unchanging in our fellow-men, and other things that are ever changing. Once more: Experience leads us to an acquaintance with death. We visit the body of some relative or friend laid out for burial. It is not possible to mistake the body. The form, the features, the size, certain bodily peculiarities, are all there; but what a change! No voice,—fixed, glassy, eyes,—ears that cannot hear, and hands that cannot beckon, and legs without motion,—the body pale, stiff, icy cold. Life has gone out of it. When we steal softly to the chamber of death, we go to gaze on a corpse,—not on *him*.

Now to look at these facts of consciousness and experience metaphysically:—It would appear from what has been stated, that in each and every man there are certain real entities which we call accidents, because they only *happen* to the man. They come, and they go, and they change, unintermittingly throughout the course of life. These may, therefore, be eliminated, as being irrelevant to the present discussion. But, along with all these giving to them their temporary unity of collection, there is something that persists one and the same,—the apparent root and Subject of these accidents. This something persistent is not psychical only, but bodily

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as well; for in common estimation it is always the same body of the same soul. Such bodily identity, so far as it is independent, has its sole foundation in the apportionment of primordial matter. We may, consequently, eliminate this element likewise; more particularly as the question about it has been already discussed in the previous Chapter. So much, however, is plain, that a man is not a rational animal because he has a body; since irrational animals, plants, minerals, have bodies too; and, moreover, the bodily part is ever changing owners. Lastly, if such were the case, a corpse would be a rational animal. There is, then, another substantial constituent in man, which gives to the entire composite its specific nature,—in other words, which causes man to be a rational animal. It is principle of life, thought, will, feeling, passion, sensation, imagination; so that, when it leaves the body at the moment of death, these faculties, one and all, leave with it. It is moreover, substantially united to the body; so that, before it actuated the embryo, this latter was not a man, and after it leaves, the body ceases to be a man. This union is so intimate, that the said substantial constituent gives life and faculty to every organ, to every portion of the body. It is everywhere within the limit of that body; and is the source of its vegetative and sensitive life. Such substantial composite is called the soul. Now, what can be surely gathered from these premisses touching the causality of the soul in the constitution of the human composite? Thus much: It, and it alone, actuates the primordial matter which is the ultimate in the organized body that has been prepared for it. It is the only other substantial constituent; and it alone causes the composite to assume the specific nature of a man. But this is precisely what is meant by a substantial Form. Neither will it do to object that such union is not intrinsic or substantial; because, first of all, were such the case, the soul could not give substantial life to the body, nor would all vital operations necessarily depend upon it. Then, in the second place, the *Me* that thinks and wills and feels would be only adjacent to the body that represents it to sense. Hence, there might be a duality, but no unity such as the *Me* postulates. The conclusion, then, is certain, that the human soul is the substantial Form of the body [1].

[1] This is one of those very rare instances in which a metaphysical truth, by reason of its intimate connection with the Divine Revelation, has been defined by the Catho-

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On the strength of this conclusion it is inferred that all bodies are similarly actuated by a substantial Form. As to all living bodies, whether animal or vegetable, the deduction seems to be irrefragable, since the facts and consequent premisses are identical. It is true that the human soul is spiritual and, in consequence, has faculties of thought and will, neither of which can be univocally predicated of the souls of animals or plants. But then it must be remembered that it is not the substantial Form of the body in virtue of these faculties; on the contrary it exercises these faculties independently of the body. Any sane psychology must reject, (as the Doctors of the School rejected), the materialistic opinion of some modern physicists, that intellect and will either reside in, or function by means of, certain special organs[1]. Accordingly, considering the human soul exclusively and formally as the act of the body, these spiritual faculties have nothing to do with the question. So then, for all that concerns the actuation of matter, the instances of man, animal, and plant, are identical. In each there is a principle of life from which as from their source proceed certain faculties common to the three. In each the loss of that principle of life is death, with its accompanying loss of the aforesaid faculties; and then the substance ceases to be that which it had been before, turning into something else. In each this hidden principle of life actuates primordial matter and organizes a body proper to itself.

Secondly, the same inference includes inanimate bodies. For, though we are no longer in presence of life, we are nevertheless cognizant of a substantial element that guarantees to each body its

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lic Church as *of faith*. The Council of Vienne in A.D. 1311 decreed that 'whoever henceforth should obstinately presume to assert, defend, or hold, that the rational or intellectual soul is not the Form of the human body of itself and essentially, is to be accounted for a heretic' (quisquis deinceps asserere, defendere, seu tenere, pertinaciter praesumpserit, quod anima rationalis seu intellectiva non sit forma corporis humani per se et essentialiter, tanquam haereticus sit censendus). This Canon was afterwards confirmed by Leo X., in the Lateran Council, A.D. 1513, and has been again confirmed in our own time by Pius IX., in the Brief *Etenim non sine dolore*, published June 15th, A.D. 1857.

[1] There are persons who have been deceived into this false opinion by certain physical facts,—such as, for instance, that the brain gets tired by long study, and that an energetic act of the will has a sensible effect on the action of the heart. But they mistake the cause. The tired head is occasioned by the efforts of the imagination in evoking those sensile phantasmata, without the aid of which the soul, so long as it is united to the body, cannot exercise the faculty of thought; and the pulsation of the heart is accelerated, not by the act of the will, but by the impulse of some accompanying passion or feeling.

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own specific nature. These lifeless substances, too, have something transient and something stable. Size, shape, colour, softness, hardness, heat and cold, may change and come and go; yet the substantial thing, whatever it may be, preserves its essential identity. Whence comes it, then, that a *diamond* is always diamond,—*iron* always iron,—*sulphur* always sulphur,—*hydrogen* always hydrogen,—to whatever accidental changes they may be exposed, until by chemical combinations corruption has taken place and a new substance has been evolved? Each has its own perfectly distinct nature, or essence. Whence has it derived such essence? Not from matter; as has been repeatedly proved already. Not from any accident; for it is ridiculous to suppose that a mere accident can cause the specific nature of a substance. Thus the conclusion is peremptory that, as in man and in living things there is a substantial Form which actuates the matter and gives to the composite its specific nature; so, inanimate bodies are constituted in their specific nature by a substantial Form.

The above argument, drawn from the analogy which all other material substances bear to man, in so far forth as the latter is considered exclusively in the light of a material composite, needs further enucleation. There are two points, then, in the said analogy, which seem fully to justify the present conclusion.

i. The first point is based upon the facts given under the second argument in proof of the *hundred and thirty-ninth Proposition*. It has been there shown, that there are ceaseless interchanges between bodily substances,—a continuous series of corruptions and generations,—which are verified in the instance of inanimate, as much as in that of living, bodies. By the term, *interchange*, is meant, the passage of matter from one substance to another, and its return to a substance specifically the same as the one from which it originally started. Thus, for instance, the matter of an inanimate substance such as *carbon*, together with the special properties of the element, passes into some vegetable substance, thence into an animal, thence into man; and it finally returns to the inanimate substance of carbon with which it commenced. Now, man participates to the full in this interchange. He assumes to himself, by way of nutrition, from the matter that is in animals, in vegetables, in inanimate substances. Moreover, corruptions and generations follow precisely the same law in his case as in that of all other material substances, so far as mere vegetable and animal life are con-

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cerned. If, then, (as is most certain), the determining and regulative element in the midst of these substantial changes of matter is the substantial Form, in the instance of man; it reasonably follows that the determining and regulative principle in the midst of precisely similar changes should be also the substantial Form, in the instance of other material substances.

ii. Man is subject to material alterations,—that is to say, accidental changes. This, again, he shares in common with all other material substances. All bodies, inanimate as well as animate, are subject to the same law. It behoves us, then, to inquire why such accidents are individuated. Why is the *redness of hair*, for instance, attributed to *James*? Why are such a particular *form of nose* and *colour of the eyes* attributed to the same individual? There must be a principle of appropriation and of unity somewhere. Yet, it cannot be in the matter alone for the reasons already stated. It cannot be in any accident; if for no other reason, because it in turn would have to account for its own appropriation. The question, then, must again be put: What is the principle of this sameness or identity that reduces under its own unity, in the instance of every material substance, these ever-changing accidental phenomena? If in man it is the substantial Form; it will likewise be the substantial Form in the instance of all other bodies. However, let thus much suffice for the present; since we shall have to consider the argument at greater length under its more general relation.

To reduce, then, this first argument into logical form:—Man, *as* man, consists of a substantial Form which is an intrinsic cause in his substantial composition. Therefore, *à pari*, all other material substances are constituted in their specific nature by a substantial Form. The *Consequent* is proved, as follows. All material substances, as being subject to corruption and generation, (which are substantial changes), as well as to alterations, (which are accidental changes), are in these respects under one common law, or order, and suppose a similar substantial constitution.

II. The second argument in favour of the present Proposition is derived from the existence of *properties* in bodies. The term, *property*, is here taken in its logical sense as expressive of an accident which is common to all and each of a given logical whole. If it belongs to a generic whole, it will be common to many species, yet to none outside the genus; if it belongs exclusively to a

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species, it will be common to each and every individual contained under that species, but to none other. Speaking metaphysically, a property is that which, though no part of the essence of an entity, nevertheless flows from that essence. As the metaphysical whole is the ultimate species, the generic properties would necessarily accompany the material part of the essence. Both kinds of properties, however, flow from the integral essence, though in different order. An instance of a specific property in *man* is to be found in the reasoning faculty. Neither angels nor brutes use the syllogism; though the causes why they do not use them are, in each case, diametrically opposite. An instance of a generic property in man is the faculty of sensation, which is common to all animals. The present argument embraces both kinds of properties, though primarily the specific.

That there are accidents of this kind throughout the realm of nature, no one can reasonably call in question. Thus,—to take a few examples,—the faculties of *speech* and of *true laughter* are peculiar to *man*. Its curiously constructed *tail* is a characteristic of the *rattle-snake*. It is a property of *mammals* that they should be *viviparous*; of *birds*, that they should be *oviparous*; of *serpents*, that they should be *oviviparous*. The *rhomboidal or polygonal scales* of the *ganoidians*,—of the *sturgeon* for instance,—are a property. That *exogenous trees* should form their stem by successive additions and that their seeds should be dicotyledonous and leaves reticulated, is another instance of a property. So is the *stinging* faculty in a *nettle*. Among properties of inanimate bodies may be mentioned the *cubical crystals* of *salt*,—the *octohedral crystals* of *alum*,—the *light specific gravity* and *inflammability* of *hydrogen*,—the *combustibility* of *phosphorus*,—the *caustic activity* of *nitrate of silver*,—the *strong attractive power* of *fluorine*, (such that, according to general opinion, it has never yet been isolated),—and the remarkable *blue colour* which is the invariable companion of *sulphate of copper*. In some of these instances, particularly in those which belong to the external form, the property may be destroyed, (so far as it exists in act), by mechanical means; but it nevertheless remains potentially in the substance, ready to become actual when occasion offers.

The facts established, the question naturally arises: Whence comes in bodies this difference in their relation to different accidents? Why is it that, in the case of all material substances, some accidents will come and go and come again without interfer-

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ing with the nature of their Subject; while others, on the contrary, seem to be so completely rooted in the material substance which they modify, that they remain immoveable for so long as this latter lasts? There must be some intrinsic cause for such a difference. Now, speaking within the limits of the order of nature, there are only three possible causes, intrinsic to bodies, of this inalienability of a property. Either it is the result of some other inherent accident; or it owes its existence to the matter; or it must be traced to an intimate connection of the accident with some other substantial constituent of its Subject. If any other member can be added to this disjunctive *Major*, let it be produced. Meanwhile, the completeness of the disjunction may be taken for granted. But it cannot depend on some other inherent accident as its ultimate principle; because this second accident must in turn depend on something else, and thus the question is only driven a step back. It may indeed be, that one accident is inseparably connected with another; as it would seem, for instance, that *rarefaction* in most substances is inseparable from *heat*. But this would only send us back to the heat; for the inseparability of the one is the inseparability of the other,—that is to say, if the heat is inseparable from the Subject, the accompanying rarefaction will be so in like manner, and *vice versa*. Therefore, the question must return: Why, (if it be so), is the heat inseparable? No accident, then, can be adequate cause of the phenomena now under consideration. Neither can the cause be discovered in matter which, as we have seen in the previous Chapter, is of itself indifferently susceptive of any Form, equally disposed towards all. Consequently, it remains that there should be some other substantial constituent of bodies besides matter, —a constituent which determines the specific nature of the entity, and brings along with it certain accidents that spring from such nature as from their source and are, accordingly, naturally inseparable from it. This substantial principiant has been called, at least since the days of Plato and Aristotle, the substantial Form.

The above argument receives confirmation from another physical fact. A given material substance behaves itself, so to say, differently towards different accidents. Of such accidents as it receives from the action of an external agent, some are so antipathetic to its nature that it receives them, as it were, under protest, and gets rid of them as soon as it is left to itself. Thus, a *bar of iron* is elevated to a *white heat* under the action of a furnace; but no

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sooner has it been removed from the aggressive influence of the fire, than it begins to return to its normal temperature. So, it is possible to reduce a *gas*, by the application of sufficient pressure and of cold, to a *liquid*, and even to a *solid*, state; but no sooner is the said gas withdrawn from the compulsory force of these agents, than it returns to its former condition of an aeriform fluid. There is a striking instance of the same thing in the vegetable world. Among the climbing plants the *convolvulus* and *scarlet-runner* twine round their supports *against* the sun; the *hop* and *honeysuckle*, *with* the sun. The experiment has been tried of inverting the direction of the spiral rings of the stem; but it has been invariably found that the plant will undo the new arrangement and return to its normal convolutions as soon as it is abandoned to its own spontaneous energy. But other accidents a material substance welcomes, as it were; often, indeed, they are congenital with it. Thus, *cast-iron* has a natural tendency to *brittleness*,—*nitrogen*, to escape all perception of the senses,—the *inspissated sap of scammony*, (*convolvulus scammonia*), is *cathartic*. It may possibly be objected to the above examples, that they are properties, and not mere accidents, of their respective substances; and,—to confess the truth,—in the instance of inanimate bodies, it is often difficult to draw the line between the two. Let us go, then, for a clearer illustration to the highest order of living bodies. It is indisputable, that the *curliness* or particular *colour* of the human *hair* is purely accidental; yet, if a man naturally has straight hair, not all the curling-tongs in the world will effect a permanent change; and should a young lady with naturally *black* hair change by chemical processes the native colour to an *auburn* or *golden* hue, nature will quarrel with the arrangement, as soon as ever it is allowed its own course. There would seem to be no way of adequately accounting for these and the like phenomena, unless we acknowledge the existence of a substantial Form, attractive of the one accident, repulsive of the other.

III. A THIRD *à posteriori* ARGUMENT in favour of the present Proposition is derived from the natural apparent subordination of accidents belonging to one and the same body. It must be again owned that it is somewhat difficult to establish the fact of such dependence in the lower orders of material being, owing to the comparatively little we know about them. It may possibly be, for instance, that there is a latent interdependence between the

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power of attraction and the polarity of the magnet; although (the statement is made with the greatest diffidence and under correction) it does not seem as though such interdependence has been established as yet. In like manner, accidents of external form, colour, smell, taste, hardness or softness, and the like, may be interlinked in a manner of which we, who are the veriest novices in the laboratory of nature, have no suspicion. Now, it is obvious that we cannot legitimately construct a demonstration on mere surmises; for premisses that are themselves uncertain must conclude in the uncertain. There is this advantage, nevertheless, in the indubitable facts which present themselves to our notice; and it is this. If they do not assist the present argument, they must subserve the argument that will immediately follow. Either such accidents are independent of each other or they are mutually dependent. If the latter, they confirm the *Minor* of the present syllogism; if the former, they confirm the *Minor* of the next proof. They, therefore, assume the force of a dilemma; and thus establish the truth of the Proposition under either alternative. Somewhat more, however, has to be added. There are facts which indicate a dependence of the accidents informing the same substance on each other, which are sufficient to create a strong presumption in favour of such interdependence, even though we are wholly ignorant of the connection. Allusion is here made to the correlation of accidents in an entire class of bodies. In connection with this phase of the argument much valuable and interesting information is to be found in the section on *Correlation of Growth*, comprised in the fifth Chapter of Mr. Darwin's well-known Book *On the Origin of Species*. The author does not pretend to have discovered the cause of these correlations, though in certain cases he, as it were, tentatively suggests a reason; but he testifies to their existence, which is all we want. 'The nature of the bond of correlation,' he writes,' is very frequently quite obscure. M. Is. Geoffroy St. Hilaire has forcibly remarked, that certain malconformations very frequently, and that others rarely co-exist, without our being able to assign any reason. What can be more singular than the relation between blue eyes and deafness in cats, and the tortoise-shell colour with the female sex; the feathered feet and skin between the outer toes in pigeons, and the presence of more or less down on the young birds when first hatched, with the future colour of their plumage; or, again, the relation between the hair and teeth in the naked

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Turkish dog, though here probably homology comes into play? With respect to this latter case of correlation, I think it can hardly be accidental, that if we pick out the two orders of mammalia which are most abnormal in their dermal covering' (skin), 'viz. Cetacea (whales) and Edentata (armadilloes, scaly ant-eaters, &c.), that these are likewise the most abnormal in their teeth.' Then follow many curious instances of similar phenomena in plants, which are well worth reading; and the author concludes as follows: 'Hence we see that modifications of structure, viewed by systematists as of high value, may be wholly due to unknown laws of correlated growth, and without being, as far as we can see, of the slightest service to the species.' There is another well-known instance of this unaccountable correlation of accidents in the human species,—the coincidence of white hair with pink eyes and defective sight in the *albino*.

But we have undoubted facts, upon which the present deduction rests, revealed to us in the higher forms of material being. In man the will depends upon the mind. No one can love or appetize the unknown; just as, in like manner, no one can detest or avoid the unknown. An act of the will, therefore, presupposes knowledge or perception; which means, in other words, that the will is dependent on the intellect. Now, if there be a dependence; such dependence cannot be attributed to the accidents (the two faculties) themselves. On the contrary, of themselves, considered exclusively as accidental Forms, they would claim independence of each other; since one Form is independent of another *jure suo*. *White* does not depend on *soft*, or *sweet* on *brittle*. In like manner, the will would not depend on the intellect, if there were no fundamental principiant to which the correlation of the two may be traced. But this principiant cannot be an accident, for the same reasons as before. Matter is out of the question. Therefore, it must be the substantial Form. If we stretch the two terms, *mind* and *will*, so as to include their analogical significates,—those obumbrations of the said faculties, discoverable in certain higher kinds of animals,—the force of the argument is the same.

IV. A FOURTH *à posteriori* ARGUMENT is derived from the certain fact, that unsubordinated and independent accidents are seen to coalesce in one entity. Thus, for instance, the union of *sweetness* with the *cubical crystalline form* and with *stickiness* in sugar is evidently not the result (so far as we know) of any sort of depen-

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dence on the part of these three accidents; for in common salt there is the same crystalline form without the same adhesiveness and with a taste the opposite of sweet. Nor are these accidents fortuitously united, seeing that they are always the joint companions of sugar. In like manner the co-existence of a highly developed *nerve-system* with the *vertebrate structure* of the human body is justly to be regarded as an instance of two unsubordinated accidents united together, since they have no necessary connection with each other. The complicated nervous system has no necessary connection with the vertebral structure of the body; otherwise, the former would always accompany the latter. Yet such is not the case; for there is one section of the Vertebrates, (the *Amphioxus* or *Lancelet*, a sort of lamprey), which is without a skull and is destitute of the five brain-bladders, its central nervous system being represented, according to Professor Haeckel, by 'this most simple form, that of a cylindrical tube, the anterior and posterior ends of which are almost equally simple, and the thick wall of which encloses a narrow canal [1].' In a word, the central nervous system of this species of lamprey is limited to a simple back-chord protected by its surrounding sheath. So, again, the union of a high order of instinct with a definite organization and nervous system is another instance of the meeting in one entity of accidents that are independent of each other. That they are independent, is proved by the logic of facts. For among the placental mammals we find the armadillo and sloth on the one hand, the elephant, dog, cat, on the other;—the former types of stupidity, the latter of sagacious instinct. Again: the arthropods have a much lower organization and more simple nerve-system than the vertebrates; nevertheless, among the former are to be found the harvesting ant and trap-door spider (of both of which Mr. Moggridge has given us such an interesting history [2]), the termite, (or so-called white ant), the bee. Of the termites Dr. Nicholson observes, 'No higher development could well be imagined amongst creatures devoid of the higher psychical endowments [3]', i.e. of a spiritual soul with its corresponding faculties. He adds 'that at least three distinct and independent families of Insects have attained to this stage,—namely, the Termites, the Bees, and the true Ants [4].' It is impossible to

[1] *The Evolution of Man*, V. 1, p. 418.
[2] *Harvesting Ants and trap-door Spiders.* Reeve & Co.
[3] *A Manual of Zoology*, ch. xxxix. p. 246.
[4] *Ibidem.*

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read the account given by Mr. Moggridge of the *harvesting ant* and *trap-door spider* and that given by Dr. Nicholson of the *termites*, without astonishment at the height to which animal instinct can reach. The instance of the *bees* it is needless to corroborate by authority; since it has been for ages the common theme of poets and moralizers. Therefore, there is no necessary connection between animal instinct and any particular bodily structure and organism or nerve-system,—a point worthy of careful note, especially on the part of those who are so simple as to take any heed of certain modern psychological dreams. But again: The colour, smell, shape of a *rose* are accidents which exhibit no signs, so far as we know, of interdependence; for the colours vary, sometimes on the same plant, while roses of the same colour are found to differ in their scent In like manner, apart from those of the Channel Islands there are four leading breeds of cattle at present in this country. Of these the *English short-horns* are characterized in accordance with their name; but occasionally instances will occur of a marked prolongation of the horn. Some are *white*, some *roan*, some *red*, others *red and white*. The *Scotch Galloways* are *polled*,—that is to say, have no horns; and are generally *black*, though occasionally of a *grey roan*. The *Devons* are *red all over*, with *medium horns*. The *Herefords* are *red with white* faces, also with *medium horns*. The colour, then, is variable even within the limits of the same breed; and there is no apparent interdependence of colour and possession or length of horns.

Now, it is notorious that men universally individualize these and similar collections of accidents; otherwise, they would not have become *collections* of accidents at all in common estimation. To translate this into other words:—The human mind universally and instinctively recognizes some individual entity in such sets of mutually independent accidents. Nay, more: Unless its attention should be specially called to the said accidents, it virtually ignores them; and represents to itself the specific and individual entity rather than the accidents that clothe and sensibly manifest it. But such specific and individual entity,—this objective oneness,—cannot be a mere fiction of the mind; for to suppose this is to suppose that all human perception is a delusion and a lie. The question, then, arises: Whence is objectively derived this perception of specific and individual unity? What is there in the object, which compels the mind to represent that collection of accidents as indi-

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vidually and specifically one? Nobody surely could seriously maintain that it originates with the accidents themselves. For,—not to urge the nature of an accident, which in order of nature and existentially requires a Subject of inhesion,—there is no reason in the accidents themselves why they should coalesce, and not rather be distributed; since their independence of each other forms the foundation of the present argument, and is presupposed. Besides, it is a fact that these specific accidents do really exist in a state of separation. *Horns* are to be seen in the *antelope*; *red and white* in *damask-roses*. Why do men call this particular combination of the said accidents a *Hereford ox*? Moreover, how is it that they have combined at all? Again: We cannot think of these and similar accidents in the concrete, save in connection with something else. If there are horns, they are horns of something or other; if we conceive white or black, it is *something* that is white or black. Neither can it be said with any show of reason, (as some have unjustly attributed to Locke), that the individuality and specific nature are constituted by the collection itself; for this is to put the cart before the horse, according to the vulgar adage. A mere collection of imperfect entities cannot do away with the essential imperfection of their being. Then again, we come back to the primitive question: How are we to account for the collection itself? It would be empty to reply, that the collection arises from continuous combination and collective isolation in space. First of all, place is a consequent of being, not being of place. Then, the old question returns: Whence is it that they are combined, and what is the cause of their collective isolation? Furthermore: The old difficulty presses against both these hypotheses, viz. that in either case all real specific and individual distinction would be purely accidental; and that, accordingly, man would only by accident differ from charcoal or hydrogen. Once more: Primordial matter cannot of itself be a sufficient reason of the said unity, for the same reasons as before. Lastly: Such specific and individual unity cannot be derived from any actuation of mere matter by the accidental Forms; for, if a like information were possible, the resulting composite would be accidental. Again: Either the informing accidents in the above hypothesis would be one or manifold. If one only, there would be no collection; which is beside the question. If manifold, there would be many entities; because there would be no principle of actual unity and individuation save the accidental

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Forms, and these are many. Then, the question recurs: Why do these particular accidents conspire to inform the same portion of matter,—supposing, for the sake of argument, the possibility of the process? In conclusion: The general consent of mankind negatives such an hypothesis; and common sense confirms the verdict. Who is there that can conceive,—say, *red*, *smooth*, *round*,—and primordial matter, save in union with a third factor as necessary to the reality of the whole? Well, that third factor must be substantial, as is evident from arguments already given more than once. It must also be specifically and in some sort individually differential, as act of the matter,—that is to say, it must be capable of establishing specific distinction and the individuation of existence, (though after a different fashion), to the entity which gathers together within itself these independent accidents. In addition, it must be sufficient cause of the selection of the said accidents. All these requirements are fulfilled in a substantial Form, and in a substantial Form alone.

V. ANOTHER *à posteriori* ARGUMENT is derived from the alternating corruptions and generations of bodies and from consequent transformations ceaselessly recurring. But it will be unnecessary to pursue this argument; as it has already been developed at some length in the *hundred and thirty-ninth Proposition*. It is only necessary to remark, that there the facts were produced to prove the existence of an undifferentiated primordial matter; while they are resuscitated here for the purpose of showing that in bodies there are differentiating substantial Forms. These two sides of the same Subject are so essentially intertwined that, in demonstrating the one, you *ipso facto* demonstrate the other.

VI. The above *à posteriori* conclusions are corroborated by *à priori* ARGUMENT. All *à priori* demonstration is derived from the causes of the Subject. In the present instance, these causes are the material, efficient, and final; for evidently enough the substantial Form has no formal cause, seeing that itself is a pure Form. There are, then, two members in this demonstration, one of which is preparatory to the other. In the first it will be shown, that there is nothing repugnant in the concept of a material substantial Form; while in the second it will be demonstrated, from the causes of this Form, that there is a sufficient reason for its existence.

i. There is nothing repugnant in the concept of a material substantial Form. This may be evinced in two ways. First of all, (assuming the Existence of God and the spirituality of the human

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soul,—the former of which will be proved in the ninth Book, while the latter is taken as a *Lemma* from psychology), it is argued as follows. To say nothing for the present about pure Intelligence:—It is evident from the Being of God, that there is a substantial Form Subsisting but not Informing. It is further evident from the human soul, that there are substantial Forms subsisting and informing. Therefore, there is nothing repugnant in the supposition that there exists a lower grade of substantial Forms informing but not subsisting. Nay, rather there seems to be a certain congruity in such a completion of possible gradations. Again: If there be any repugnance in the concept, it must be either because the said Form is an act, or because it is substantial, or because it is a substantial act, or finally because it is the substantial act of matter. But there is no repugnance in any one of these notions. Therefore, etc. The *Minor* is thus proved part by part. (*a*) There is nothing repugnant in its being conceived as an act, because it is self-evident that there are such things *de facto* in the established order of nature, and *ab esse ad posse valet illatio*, (that is to say, any inference from actual being to its possibility of being is valid). Thus, for instance, who can doubt that thought is an act of the intellect,—volition, an act of the will,—sensile perception, an act of the internal faculties of sense? (*b*) Is there, then, anything repugnant in conceiving the Form as something substantial? Surely not, since substantial entities, according to all sane philosophy are the root of the rest, and, moreover, the Form of Forms is Substantial. (*c*) Is there any repugnance discoverable in the conjunction of *act* and *substantial* under one concept? Let us see. An act essentially denotes perfection. If, therefore, there is no repugnance in the concept of an accidental act, but on the contrary such entities really exist, as the examples given above clearly show; *à fortiori* there can be no repugnance in the concept of a substantial act, since substance has a prior claim to perfectness by virtue of its pre-eminence. Again: As Suarez (from whom these and the following arguments have been mostly borrowed) justly observes, it would seem as though substance, by reason of its more perfect entity, would naturally exhibit a repugnance for potentiality rather than for act. But in the preceding Chapter it has been proved that there exists a substantive potentiality. How, then, can there be any repugnance in the concept of a substantial act which is the correlative of the former? Lastly, if there be any repugnance in

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the concept, let it be shown; for as yet it has not been attempted. (*d*) Neither is there any repugnance in the concept of this substantial Form being the act of matter; since matter as a pure potentiality demands actuation within the limits of its own Category.

ii. Having thus determined the possibility, or non-repugnance, of these substantial Forms, it remains to demonstrate from their causes that there is a sufficient reason for their existence. 1. This is proved, first of all, from their material cause. To begin with:—There is a universal correlation in every Category between potentiality and act. Wherefore, seeing that there exists a substantial potentiality which lies at the foundation of all bodies, this potentiality naturally postulates its act. That primordial matter naturally postulates its act, is thus declared. That which is essentially and intrinsically most imperfect in its own entity and has a transcendental relation to something else by which it is made perfect within its own Category, naturally postulates that something else. But primordial matter, forasmuch as it is a purely passive potentiality, is essentially and intrinsically most imperfect in its entity, —because it is a potentiality, has a transcendental relation to its act,—because it is a substantial potentiality, has a like relation to its substantial act by which it may be perfected within its own Category. Therefore, the existence of primordial matter essentially postulates the existence of a material substantial Form. 2. A sufficient reason for the existence of material substantial Forms is discoverable in their efficient cause. Their efficient cause is either the First Efficient Cause, Who is the Ultimate Efficient Cause of all finite being, or secondary causes. As to the Former, everything is possible to Him, which does not include a metaphysical impossibility,—that is to say, a contradiction in terms. But it has been proved in the first member of this *à priori* argument that there is no such impossibility, or contradiction. Therefore, etc. In the second place, should it be a question of secondary causes, it is plain that, if the production of these Forms is necessary to the constitution of the visible universe, efficacy will not be wanting to the immediate agents: since nature never fails in things necessary. It will be premature to say anything further about this secondary agency, since the subject will engage our special attention in the next Chapter of the present Book. 3. A sufficient reason for the existence of material substantial Forms is especially demonstrated from their final cause. The final

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cause of substantial material Forms is the constitution, integration, essential completion of bodily substances. But, presupposing the intended existence of the actual order, the accomplishment of this end is an absolute necessity. Therefore, the existence of material substantial Forms is equally necessary. *The accomplishment of this end*,—that is to say, the constitution, integration, essential completion of bodily substances,—*is an absolute necessity*, because otherwise there would be no external world at all. For primordial matter has a Being so attenuated as to be absolutely incapable of existing apart from some Form; consequently, without the Form no matter. Again: For the sake of the argument let us suppose that matter could exist of itself, independently of the Form; what would be gained? In itself it is invisible; therefore, it could not become an object of the senses. In itself without distinction, it could offer no variety. Again: In itself it is purely passive; therefore, it would be incapable of any whatsoever energy, force, or operation. Once more: It is wholly undifferentiated in itself, and contains no even germinal elements of possible differentiation. How could a purely passive potentiality differentiate itself; since to differentiate is to energize? Hence, all distinction, variety, order, natural forces, essential operations,—all classes, genera, species, variations,—would be impossible in nature. Finally: An entity scarce worthy of the name of an entity,—a half-being essentially postulating its perfection from some other entity which, nevertheless, is not,—a passive potentiality awaiting its correlative act, yet never destined to receive it,—would permanently occupy the place of the present Cosmos.

Difficulties.

I. The first argument brought forward in proof of the present Proposition is utterly invalid. It is an argument *à pari;* and the parity assumed has no existence. This assertion is proved in the following way. The fundamental truth from which the reasoning proceeds is, that the human soul is the substantial Form of the human body. So far, so good: The opponent, from whom the present objection is taken, does not call the proposition in doubt. But then, as he complains, it is concluded from the above fact that all material substances are in like manner constituted by a substantial Form; and the premiss does not justify the conclusion. For this supposed parity 'exhibits numberless disparities such as

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must intercede between a rational, spiritual, immortal, soul that is self-subsistent, and certain bodily, corruptible, incomplete entities.' So infirm, indeed, has this argument been felt to be, 'that it is not used by all the Scholastics, but by the Thomists alone who were of opinion that the very being of the body depends on the soul.'

ANSWER: It is quite true that, if we compare the human soul with the substantial Forms of other material substances, whether animate or inanimate, there are striking disparities which cannot fail of arresting our attention. But it must be observed, that some of the disparities enumerated in the objection exist only in the mind of the objector. For instance: Though the human soul is capable of subsisting by itself, it is to its own loss; because it is essentially an incomplete substance. This imputed disparity, therefore, resolves itself into a very marked parity. The human soul is an incomplete substance, because it was created to be the Form, or act, of the human body and, in consequence, cannot naturally exercise its lower faculties save in union with the body. Again: According to the philosophy of the School all substantial Forms, even those of inanimate bodies, are incorruptible; just as primordial matter is incorruptible, though for another reason. It is the integral composite alone which, as we have seen, is subject to corruption. In consequence of the corruption of the composite substance which renders the matter incapable of supporting any longer its original Form, or by virtue of a transformation which necessarily postulates the recess of that Form, (and these two reasons are practically one); the said original Form may retire into its former state of potential existence or, as the Schoolmen say, into the potentiality of the matter, but it can never, properly speaking, be corrupted. Consequently, the second alleged disparity results in another observable parity. Nevertheless, it is to be owned that there are disparities of no mean account between the two; for the human soul is a spiritual substance, immortal, and immediately created by God, whereas all other material substantial Forms are not spiritual, not immortal, nor immediately created by God, but educed out of the potentiality of matter after a way that will be explained in the next Article.

But the question now arises, whether these confessed disparities affect in any way the force of that parity which forms the foundation of the argument here impugned; and it will be seen that,

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according to the teaching of St. Thomas, they affect the argument in no other way than to strengthen it. In order the better to establish this assertion, it will be necessary to introduce parenthetically certain truths touching the human soul, which are borrowed from psychology. First of all, it is demonstratively concluded that, as St. Thomas puts it, the soul of man 'is *immediately* united to the body[1].' Hence, as the soul is a simple substance, it is wholly united to the body in its essential nature without any intermediary. This immediateness of union, however, by no means excludes the previous existence, in the primordial matter portioned out for each human body, of antecedent substantial Forms which successively prepare such matter, by higher gradations of organization, for the reception of the created soul. But no one of these Forms is co-existent with another; each one makes way for its better. Hence, there can be no Form intermediate between soul and body in the instant of union. In the faculties, on the other hand, and concomitant operations of the human soul, there is an important difference in order of excellence as well as in order of relation to the body. 'It is not necessary,' as the Angelic Doctor observes, 'though the soul is substantially the Form of the body, that every one of its operations should be effected with the help of the body. . . . For it has been already pointed out, that the human soul is not of such a kind as to be entirely immersed in matter; but among all the other Forms it is the most elevated above matter. Hence, it can act independently of the body,—that is to say, as though it were not dependent on the body in its operation; because not even in its essential being does it depend upon the body[2].' Accordingly, the faculties and operations of the human soul may be divided into two principal classes, viz. those which belong to the soul as elevated above matter and are independent of the body and of any bodily organ, and those which formally belong to the soul as act of the body and are dependent on the body and on some particular bodily organ.

[1] 'Ex praemissis autem concludi potest quod anima immediate corpori unitur.' *Cg. L. II, c°* 71.

[2] 'Non est autem necessarium, si anima secundum suam substantiam est forma corporis, quod omnis ejus operatio sit per corpus. . . . . Jam enim ostensum est quod anima humana non sit talis forma quae sit totaliter immersa materiae, sed est inter omnes alias formas maxime supra materiam elevata; unde et operationem producere potest absque corpore, id est quasi non dependens a corpore in operando, quia nec etiam in essendo dependet a corpore.' *Cg. L. II, c°* 69, *in m.*

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This is the unequivocal teaching of the Angelic Doctor, on which he repeatedly insists. 'Since the human soul,' he writes in one place, 'is a certain Form united to the body,—in such wise, however, that it is not totally encompassed by the body, as though immersed in it like other material Forms, but exceeds the capacity of all bodily matter; in so far as it goes beyond bodily matter, there is within it a faculty for intelligible objects. This appertains to *the possible intellect*,'—a term peculiar to the Psychology of the School, which it will not be necessary to explain here. 'In so far, however, as it is united to the body, it has operations and forces in which there is something common to it with the body. Such are the forces of the nutritive and sensitive part[1].' So, again: 'Certain powers of the soul there are in it, by reason of its exceeding the entire capacity of the body;—these are the intellect and will. Hence, such powers are said to be in no part of the body. But there are other powers common to soul and body. Wherefore, it is not necessary that each one of these last-named powers should be wherever the soul is; but only in that part of the body which is proportioned to the operation of such power[2].' Once more: Speaking more particularly of the intellectual faculty, St. Thomas says: 'Since, then, the intellect is a faculty of the soul that stands in no need of any organ, it is not weakened either of its own nature or accidentally by old age or any other weakness of body. If, however, there does occur fatigue or hindrance in the exercise of the intellect on account of bodily weakness; this does not arise from any weakness of the intellect itself, but from the weakness of the powers which the intellect stands in need of,—that is to say, the imagination and the faculties of memory and of sensile cognition[3].'

[1] 'Cum enim anima humana sit quaedam forma unita corpori, ita tamen quod non sit a corpore totaliter comprehensa quasi ei immersa, sicut aliae formae materiales, sed excedat capacitatem totius materiae corporalis: quantum ad hoc in quo excedit materiam corporalem, inest ei potentia ad intelligibilia, quod pertinet ad intellectum possibilem; secundum vero quod unitur corpori, habet operationes et vires in quibus communicat ei corpus; sicut sunt vires partis nutritivae et sensitivae.' *Anima, a.* 2, *c., in f.*

[2] 'Potentiarum animae quaedam sunt in ea secundum quod excedit totam corporis capacitatem; scilicet, intellectus et voluntas. Unde hujusmodi potentiae in nulla parte corporis esse dicuntur. Aliae vero potentiae sunt communes animae et corpori. Unde talium potentiarum non oportet quod quaelibet sit in quocunque est anima, sed solum in illa parte corporis quae est proportionata ad talis potentiae operationem.' I^ae *lxxvi*, 8, 4^m.

[3] 'Cum igitur intellectus sit virtus animae, quae non indiget organo, ut ex praemis-

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Guided by the light of the above Prolegomenon, let us now face the proposed difficulty. If there be any parity between the human soul and the other substantial material Forms which, according to the Peripatetic Philosophy, constitute and essentially complete all bodily substances; it is plain that we must seek for the parity,—not in that part, (so to speak), or in those faculties, of the human soul which transcend all capacity of matter and are independent of it,—but in that part, or in those faculties, which are dependent on matter, and can only energize by means of some particular organ of the body. For this reason we are bound to leave entirely out of consideration the intellectual and volitional faculties which are purely spiritual and independent of the body, and to concentre our attention on those vegetative and animal faculties that are dependent on matter and can only operate through some bodily organism. Is there, then, a clear parity between the soul and other material Forms of material substance, when the former is thus contemplated? The parity can hardly be more complete. The origin, growth, nutritive process, of the human embyro are identical with those of other living substances. In other words, the vegetative life of man is precisely similar to that of a plant or of an irrational animal. Similarly, the sensitive life in man exhibits identically the same generic type as that to be found in other animals. There are the same senses and the same organs of sense; and the same cerebro-spinal system, which is the citadel of the motor and sensory nerves, is common to man and to the sculled vertebrates in the animal kingdom. But these nerves are the special organs of animal life. There is, however, a still closer analogy. In the earliest stages of the human embryo, there is precisely the same development as in all other organised animals of the two primitive germ-layers,—the exoderm or outer, and the endoderm or inner. The former is called by physiologists the *animal* germ-layer, because,—to borrow the words of Professor Haeckel,—'it always forms the outer body-wall with the most important organs of animal life;' the latter is called the *vegetative* germ-layer, because it 'gives rise to the inner intestinal wall with the most important

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sis (c. 68 et 69) patet; ipse non debilitatur neque per se, neque per accidens per senium vel per aliquam aliam debilitatem corporis. Si autem in operatione intellectus accidit fatigatio aut impedimentum propter infirmitatem corporis, hoc non est propter debilitatem ipsius intellectus, sed propter debilitatem virium quibus intellectus indiget, scilicet imaginationis, memorativae et cogitativae virtutum.' *Cg. L. II, c° 79, p. m.*

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organs of vegetative life.' Now, if the opinion, apparently most received in the medical profession, be true, viz. that the human soul is united to the embryo immediately, or almost immediately, after conception; is it not plain that there is an identity between the action of the human soul and that of all other animal Forms in the vegetative and sensitive development of their respective embryos? If, however, the opinion of the Angelic Doctor be true, (which for various reasons the present writer prefers very decidedly to the one more commonly maintained at present), viz. that there is a series of provisional and progressive Forms which successively actuate the human foetus, until the latter has received its ultimate organic differentiation and postulates a higher than a mere animal Form; then the foundation of the parity is strengthened. For the human soul, on its creation in the body, takes up the work initiated by vegetative and sensitive Forms, and carries it on to its mature perfection after, to all appearance, exactly the same fashion and with the same results as though these lower Forms had continued at their post. Furthermore: There is a striking analogy between the human soul and the substantial Forms of other animals under another respect. As all purely animal Forms embrace the functions of vegetative life which are eminently included in it; in like manner the human soul eminently embraces in its entity the faculties and functions of both vegetative and sensitive life. Thus at length it will be clearly seen, that the parity disputed by the present objector extends to all living things,—to the vegetable no less than to the animal world. But can the parity be fairly extended to inanimate bodies? Let us see. A just distinction has been drawn between animals and plants, to the effect that the latter in their process of nutrition absorb inorganic substances and transmute these into organic; while the former absorb organized substance and provisionally resolve it into inorganic. Since the animal either immediately or mediately receives its nourishment from vegetable substance which has itself been nourished by inanimate and unorganized bodies, and since in the process of animal digestion the organic substance is resolved into its constituents; it is evident, (as has been pointed out in the preceding Chapter), that the same inanimate bodies pass into vegetable, and thence into animal, substance in some way or other, and after this often repass more or less into their primitive constitution. By the process of absorption they lose what may be metaphysically

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called their independence, and become partial elements contributing to the substantial nature of a plant and afterwards of an animal. Thus, speaking again metaphysically, they part with their own complete substantiality, and become subordinate constituents of another substance. What is the real meaning of all this material interchange? Surely, if there exists in the material order a union so intimate between inanimate and animate bodies, (and about this there is not the shadow of a doubt), so that the constituents of organized substance can be chemically reduced to those simple bodies, or elements, which modern chemistry has accepted as such; this fact affords grave reason for concluding that, in their essential constitution, inanimate are substantially constituted in the same way as living bodies. If they can accommodate themselves so easily to the substantial Forms of a plant and of an animal; it would be strange if they had not originally a substantial Form of their own, which they resume when they are again isolated. Modern physical theories bear unconscious testimony to this fact, when they tell us that all animals are gradually developed from an undifferentiated protoplasm which, apart from the life attributed to it, is simply a chemical combination of inanimate substances. Thus, then, the parity, which forms the basis of the first argument, legitimately includes the whole realm of material being.

As to the gratuitous statement, that *this argument is only used by the Thomists who were of opinion that the very being of the body depends on the soul*, two remarks will suffice. First of all, it matters little who use or who do not use the argument, provided that it is in itself valid. Secondly, Suarez gives especial prominence to it; yet he is as far removed as well may be from the opinion about matter which the objector describes as Thomist. The truth of this assertion will appear later on.

II. There is no need for these substantial Forms. Therefore, they are to be rejected. The *Antecedent* is thus proved. First, 'it is a groundless and false assumption that there is but one primordial matter common to all bodies; and that therefore the substantial distinction between body and body is to be attributed to the substantial Form. If the question should be raised as to how material substances are substantially distinguished; the plain answer is, that simple material substances are of themselves primordially distinguished from one another, and that mixed bodies are distin-

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guished by the diversity of their component substances.' To be more just to the author of this objection than he is himself to his own chemico-atomic theory, it would be better to add to the last clause in this wise,—*as well as to the diverse combination of its component substances.*

ANSWER.—That the existence of one only primordial matter common to all bodies is not a groundless or false assertion, has been made sufficiently apparent in the preceding Chapter; and the arguments there adduced have lately received indirect confirmation from the result of the careful and prolonged spectroscopic observations of Mr. Lockyer, (already referred to), whence it would appear to be highly probable that the so-called chemical elements are for the most part compounds, reducible to a much smaller list of elements. Still more recently, as has been reported, chemical experiments have awakened a suspicion that chlorine, bromine, iodine, are not simple substances, so far corroborating the conclusions of Mr. Lockyer [1].

It would seem, however, that these simple bodies, be their number small or great, are in the opinion of our opponent primordially distinguished in themselves from one another; consequently, that they stand in no need of a substantial Form to account for their differentiation. The *Antecedent* is willingly conceded; but the *Consequent* denied. They are distinguished from each other *by* their respective substantial Forms. This our opponent denies. If we ask him, what other principle of specific distinction is discoverable in them; he replies that it is to be found in their simplicity,—that is to say, in the fact that they are constituted of homogeneous particles, molecules, or atoms, of the same mass and weight, by which they are distinguished from any other element whose homogeneous atoms, though of the same figure, mass, and weight, among themselves, are of figure, etc., differing from those of the former body. Furthermore: He tells us that these primitive atoms have, all of them, two essential properties at least, without which they would be absolutely imperceptible if not inconceivable,—viz. extension and power of resistance. As this theory has been examined at length in the preceding Chapter, it

[1] See an interesting discussion in the March and April numbers of *Nature*, 1880; more particularly two interesting communications from Professor Armstrong—one, on *the Dissociation of Chlorine, Bromine, and Iodine* in the No. for March 18; the other on *The Density of Chlorine*, in the No. for April 15.

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will not be necessary to enter upon the subject again, save in so far as it assumes a somewhat new shape in the objection before us.

It is deserving of attention, then, that according to this author all, even simple, bodies which are specifically constituted in their own right,—*à fortiori* composite bodies,—have certain generic properties, in other words, certain properties common to all; which properties equally belong to the primitive atoms or molecules of which they are severally composed. Such are, extension, impenetrability, figure, ponderability, mass. By these properties they are all in common distinguished from spiritual substances. Now, where there are generic properties, (that is to say, properties common to more than one species), there must be a generic nature from which these properties essentially flow. If so, the substances in question cannot be absolutely constituted in themselves, but must be determined by a specific difference which, in metaphysical language is termed a Form. To put it more plainly in the concrete:—Hydrogen, oxygen, carbon, iron, sulphur, sodium, etc., are all equally matter composed of atoms, extended, impenetrable, having shape, weight, and mass. This admitted, why is such a portion of extended, impenetrable, atomic matter oxygen, and such another portion iron? Because of the atoms, say you,—their difference in shape, ponderability, etc.? We cannot admit the explanation; because the atoms of oxygen are oxygen; the atoms of iron, iron. Consequently, the same question awaits its answer: *Why* is the one an atom of oxygen, and the other an atom of iron? The substantial Form is as necessary for the supposed atom as for the whole bulk. You have reduced mass to an impossible minimum; but you have not destroyed the specific nature. In reply to this question, however, we are seriously told that the figure, weight, etc., of the atom constitute the essential difference. But this is to put an effect in the place of its cause; for the shape follows from the nature, not the nature from the shape, and so for the rest. An ox is not an ox, because it has four legs, a head and a tail, and lows; but it has four legs, a head and a tail, and lows, because it is an ox. So, sulphur is not sulphur because it has such or such a crystalline form and a yellow colour; but the particular body has such a form and colour, because it is sulphur. Besides, atoms that have a shape must be extended; but an extended *atom* is a contradiction in terms. An extended entity is one which has part outside part, so

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that absolutely part is capable of being divided from part; if, then, a material or any other entity is truly atomic,—that is to say, incapable of further division,—*de potentia absoluta* it cannot be extended. Again: To put this last argument under a somewhat different form. Each one of these atoms is entitatively composite, must be entitatively composite, according to the theory now obtruded on our notice. For this theory insists on the point, that each atom is essentially extended. Without extension it would be neither perceptible nor conceivable. But extension, as we have seen, means the existence of part outside part in the extended substance. Consequently, each atom must be composed of parts. But components are prior, at least in order of nature, to their composite. Therefore, as simple bodies are not distinguished from one another of themselves, but by virtue of their atoms; so the atoms are not distinguished from each other of themselves, but by virtue of their component parts, and so on indefinitely, till extension ceases and atoms so called, in consequence, disappear. In other words: Either your atoms are extended or they are not. If they are not, then in the hypothesis of our opponent, they are not atoms; if they are extended, you have not reached, and for so long cannot reach, either the Ultimate or the primordial foundation of distinction. Again: According to the same theory each primitive so-called atom is, and remains after union or combination, a complete substance. Now,—to say nothing of the all but infinite multiplication of substances which this involves even in a single individual such as this dog,—since each atom by reason of its extension would contain within itself an indefinite number of substances,—it is natural to inquire: What is that by virtue of which a certain number of atoms coalesce so as to constitute a body? The objector tells us that it is an attractive power which is an essential property of the atoms. Good: But, first of all, how is it that this attractive power specifically differs in different groups? Then again: All properties, though flowing from the essence, are distinct from that essence and presuppose its constitution. Therefore, they cannot constitute it themselves. Once more: A property is an accident. Therefore, the cohesion or combination of the atoms would be accidental. But, if so, the body thus constituted would not be a substance, but an accidental collection of substances. Hence it follows by logical sequence, that the human soul could not become the substantial Form of the human body. To put it otherwise: Either the cohesion of atoms

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in any given body is essential or accidental. If it is essential, it is indissoluble; if it is accidental, this same body which is constituted exclusively by the coalition of atoms must be accidental likewise. In reply to the above argument it might be urged, that the cohesion is doubtless accidental to each atom but essential to the constituted body; and this is rendered probable from the fact that the so-called atom can exist without cohesion, whereas the body cannot exist without the cohering atoms. But this answer does not satisfy the difficulty. For, seeing that the body exclusively consists of the atoms cohering by mutual attraction; the body only differs from the substances of all the atoms, thus grouped in one, by the cohesion of these latter. The cohesion, accordingly, constitutes the substance of the body, as really distinguished from the collective substances of the atoms. If, then, this coalition is accidental to the atoms, (which our opponent maintains); it follows, as a necessary consequence, that the accident of one substance can of itself become the substance of another. If it be yet further urged, that the substances of the atoms become by coalition the substance of the body; the reply is obvious. The substances of the atoms either remain complete substances after cohesion or they do not. The latter alternative is excluded by the theory in question; consequently, the substances of the atoms remain substances after coalition. If so, the former argument retains its full force. Besides, in this hypothesis the same entity at one and the same time would be one complete substance and millions of complete substances; which is not a little inconvenient as an object of thought. The difficulties augment, when we come to apply this chemico-atomic theory to composite bodies. For,—to borrow his exposition from our opponent,—all bodies, composite as well as simple, consist of a number of *integrating* molecules which are homogeneous with one another and with the whole body. But, in the instance of compound bodies, these homogeneous composite molecules are chemically resolvable into homogeneous, or *constitutive,* molecules. These last may themselves be composite. The molecules adhere by virtue of molecular attraction which serves to conjoin the homogeneous integrant, as well as the heterogeneous constitutive, molecules. When it serves to conjoin the former, it is called cohesion; when the latter, affinity. According to this theory, then, all bodies are composed,—or rather, essentially constituted,—of primitive atoms which are substances and continue to preserve their

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perseity, (or subsistence in themselves), while forming constitutive parts of a body. Now, if this hypothesis were true, it is difficult indeed to understand how bodies that are composed by what is called mechanical mixture differ from bodies that are constituted by chemical combination. In the one case as in the other the primitive atoms must be dissociated; otherwise, they would cease to be substances. In both cases there would be mutual attraction of the respective atoms. It may be perhaps said that the attraction is of a different kind; since in mixed bodies it would be the mere force of cohesion, while in chemical compounds it would be the force of affinity. But one is thereupon inclined to put the question; Of what nature is this molecular force of affinity? How does it essentially differ from the molecular force of cohesion? What are its specific effects, and wherein do they differ from the effects of the force of cohesion? Whence comes it that in the instance of mechanical mixtures,—in wine and water, for instance, or in the union of oxygen and nitrogen in the common air,—each constituent remains with its own properties; whereas in chemically compound bodies,—water, for example, or sulphuric acid,—the constituents with their properties are not discernible? Is this generation of what to all appearance is an entirely new substance attributable to the mere contiguity of atoms of different shape, weight, mass, together with the interaction of their respective forces? Such an answer would not commend itself to the common sense of most men. Once more: It is impossible to account for the life of plants and animals,—most particularly of the higher order of animals,—by any given juxtaposition and interaction of molecules and their constituent atoms. Will force of cohesion or force of affinity cause birds to fly, or fish to swim, or quadrupeds to move hither and thither? Can the one or the other account for the assimilating power of a plant, its genesis from the seed, its law of growth and of complex development? Can either of them account for the senses of animal life, or for the architectural instinct of the trap-door spider, the political life of bee and termite, the memory of the elephant, the fidelity of the dog, the scent of the bloodhound, the affectionateness of a horse, the domesticity of a cat, the obstinacy of a pig? Even, then, if it could be proved that this chemico-atomic theory, as it is called, were physically true, so far as its positive teaching goes; it is at least somewhat premature to assert that it can safely dispense with substantial Forms.

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III. The third objection is of quite another order; for it impugns the possibility of the Peripatetic, or Scholastic, teaching on the subject of substantial Forms. The argument is as follows. This teaching, more particularly in its connection with the alternate corruptions and generations of bodies, involves an insuperable difficulty. For, as we are told, the corrupted substance loses its substantial Form as a necessary condition of the introduction of the new Form by which the newly generated substance is constituted. Nor does it seem to be other than a mere difference of words, whether we say that the prior makes way for the subsequent Form, or that the latter expels the former. One thing is certain according to the teaching of the School, that the two Forms cannot coexist in the same portion of matter; because there cannot be more than one substantial Form in one individual substance. So much premised, the difficulty may be thus stated. Either there is a moment of time in which the two substantial Forms coexist in the same portion of matter, or there is an interval of time during which primordial matter exists denuded of all Form whatsoever. But both members of the dilemma are equally inadmissible according to the Scholastic doctrine; for the coexistence of the two Forms is declared to be impossible, while it is likewise admitted that primordial matter cannot exist save under the actuation of some substantial Form. It only remains, therefore, to prove the truth of the disjunctive *Antecedent*. This will be more clearly exhibited with the help of symbols. Let f represent the receding Form of the corrupted substance, and f′ the introduced Form of the generated substance. Further; let 1 and 2 represent two successive moments,—2, the moment in which the new Form is introduced and the new substance generated; 1, the moment that is supposed immediately to precede moment 2. Moments are discrete quantities; consequently, there must be an interval between each. Therefore, either the two Forms f and f′ coexist in the same subject in moment 2; or f exists there for the last time in moment 1, and f′ begins to exist in moment 2. There is no medium; it must be the one or the other, if we accept the Scholastic doctrine touching alternate generations and corruptions. It is granted by the Schoolmen that the former supposition is impossible; therefore, we are necessarily thrown back upon the latter. But, if f ceases to exist after moment 1, and f′ only begins to exist with moment 2; there must be an interval, (viz. the interval between moment 1 and

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moment 2), during which the subject is informed neither by f nor f',—that is to say, during which it is destitute of any substantial Form. This condition of things is declared by the same authorities to be equally impossible. Consequently, whichever way you take it, the Scholastic theory about substantial Forms is in contradiction with itself.

ANSWER. First of all, it may be urged with reason, in answer to the above difficulty, that it proves nothing, because it proves too much; seeing that the same objection will equally apply to every case of an instantaneous change. Take, by way of instance, a dying man. He at length yields up his last breath. One moment he is alive; the next moment, you say, he is dead. Therefore, there is an interval of time during which he is both alive and dead or neither alive nor dead. Similarly, one moment the sun is above the horizon; the next moment it is below the horizon. Therefore, there was an interval of time during which it was either at once above and below the horizon or neither above nor below the horizon.

Nevertheless, though this answer relieves the Scholastic doctrine from the onus of having to sustain by itself the full force of the difficulty, and though it suggests that a solution there must be; yet it is obvious that itself does not afford the solution. Let us now, therefore, carefully proceed in search of one; for the present objection merits much more respectful treatment than its predecessors. It fortunately happens that the Angelic Doctor has repeatedly proposed to himself this very objection under a variety of connections, and has supplied us with a full and conclusive answer. As in other instances, so here, the teaching of St. Thomas shall first be given in his own words, and then summarized with a view to its special application to the present difficulty.

i. In the first passage about to be set before the reader, St. Thomas is occupied in discussing the nature of the change, or conversion, which according to the Catholic Creed takes place in the mystery of the Holy Eucharist; and he pronounces that the change is instantaneous. But to the truth of this conclusion he proposes the following objection: 'It is impossible that an entity in one and the same instant should be bread and the Body of Christ. Therefore, the instant in which there is for the first time the Body of Christ is not the same instant as that wherein the bread is there for the last time. But between any two instants there is a time

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intervening; as is proved in the sixth Book of the *Physics*. Therefore, the conversion of the bread into the Body of Christ is successive[1].' To this objection the Angelic Doctor makes the following reply: 'Between time and an instant there does not necessarily intervene any mediate time, as there does between two instants. The truth as regards this question may be seen in the remarks of the Philosopher in the eighth Book of the *Physics*, viz. that when anything from being white becomes black; during the whole of the time that measures the alterative movement it was white, but in the last instant of that time it is black. Hence, according to him, we cannot grant that during the whole of the given time it was white, but during the whole except the last *now*. Further: Because, previous to the last *now*'—instant—'of any given time, it is impossible to admit a penultimate,—just as it is impossible to admit a penultimate point before the last point of a line;—therefore, it is impossible to admit a last *instant* in which the entity was white, but it is possible to admit a last *time*. The same is verified in those changes which are the terms of motion; as in the instance of generation which is the term of alteration[2].' The difficulty is treated at length by Aristotle in the place to which St. Thomas refers, whence he has borrowed his solution[3].

ii. In the next quotation the Angelic Doctor is discussing the question touching the justification of the wicked, in order to determine whether the change is instantaneous; and he urges a precisely similar objection against his conclusion that it is instantaneous. The objection is as follows: 'If grace is infused in the soul, it must be granted that there is an instant in which it is first there. In

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[1] 'Impossibile est in eodem instanti esse aliquid corpus Christi et panem. Ergo non est idem instans in quo est primo corpus Christi, et in quo ultimo est panis. Sed inter quaelibet duo instantia est tempus medium, ut probatur in 6 Phys. Ergo conversio panis in corpus Christi est successiva.'

[2] 'Inter tempus autem et instans non cadit necessario tempus medium, sicut cadit medium inter duo instantia. Et veritas hujus quaestionis apparet ex hoc quod Philosophus dicit in 8 Phys., quod quando ex albo fit nigrum, in toto tempore mensurante motum alterationis erat album, sed in ultimo instanti illius temporis est nigrum; unde, secundum ipsum, non est dandum quod in toto illo tempore sit album, sed in toto praeter ultimum nunc. Et quia ante ultimum nunc alicujus temporis non est accipere penultimum, sicut nec ante ultimum punctum lineae penultimum; ideo non est accipere ultimum instans in quo erat album, sed ultimum tempus. Et similiter est de illis mutationibus quae sunt termini motus, sicut generatio est terminus alterationis.' 4 *d.* xi, *Q.* 1, *a.* 3, *q.* 2, 2[m].

[3] *Phys. L. VIII, c.* 8, *p. m. p.* 263. Cf. D. Thom. in l. *Lect.* xvii.

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like manner, if sin is remitted, it must be granted that there is a last moment in which a man is subjected to sin. But it cannot be one and the same moment' in both cases, 'because in this hypothesis opposites would be in the same Subject at the same time[1].' St. Thomas, replying to this objection, makes the following noteworthy observations: 'The succession of two opposites in the same Subject is to be understood after one manner in the instance of things subject to time, and after another in the instance of those that are superior to time. For, in the instance of such as are subject to time, you cannot assign the last instant in which the preceding Form inheres in the matter or Subject. The reason of this is, that in time you cannot admit before one instant another immediately preceding, and that in time instants do not follow continuously; just as neither do points in a line, as is proved in the sixth Book of the *Physics*;' (at the commencement of the Book). 'But time has an instant for its limit. Wherefore, during the whole previous time in which an entity is moved towards one Form, it is subject to the opposite; and, in the last instant of that time, which is the first instant of the time following, it possesses the Form which is the term of motion[2].'

iii. In another place St. Thomas is occupied with the problem, whether the movements of angels are instantaneous or in time; and in his solution he repeats the same doctrine with fresh illustrations. 'It is not necessary,' he writes, 'that there should be anything intermediate between two terms; as, for instance, there is nothing intermediate between time and the term of time.' Here the Angelic Doctor is using the word *term* in its most literal, but most generic, signification. In such sense even motion is the term of its own term,—*rest*; since it immediately precedes and, in such wise, establishes the limit or boundary, of the latter. Rest begins, where

[1] 'Si gratia infundatur animae, oportet dare aliquod instans in quo primo animae insit; similiter, si culpa remittitur, oportet ultimum instans dare in quo homo culpae subjaceat. Sed non potest esse idem instans, quia sic opposita simul inessent eidem.'

[2] 'Successio duorum oppositorum in eodem subjecto aliter est consideranda in his quae subjacent tempori, et aliter in his quae sunt supra tempus. In his enim quae subjacent tempori non est dare ultimum instans in quo forma prior subjecto inest; est autem dare ultimum tempus et primum instans in quo forma subsequens inest materiae vel subjecto. Cujus ratio est, quia in tempore non potest accipi ante unum instans aliud instans praecedens immediate, et quod instantia non consequenter se habent in tempore, sicut nec puncta in linea, ut probatur in 6 Physic., sed tempus terminatur ad instans. Et ideo in toto tempore praecedenti quo aliquid movetur ad unam formam, subest formae oppositae; et in ultimo instanti illius temporis, quod est primum instans sequentis temporis, habet formam quae est terminus motus.' 1-2ae cxiii, 7, 5m.

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motion ends. 'Between two *nows* of time, however, there is an intermediate time. Hence it is said, that it is not possible to assign the last *now* in which it,'—a Form,—'was in *the term whence*, (terminus a quo); as, for example, in illumination as well as in the substantial generation of fire it is not possible to assign the last *instant* when the air was dark or when the matter was subject to the privation of the form of fire. But it is possible to assign the last time; so that at the end of that time there is light in the air or the Form of fire in the matter. Accordingly, illumination and substantial generation are said to be instantaneous motions[1].'

iv. In another of his Works St. Thomas enforces, only at greater length, the same doctrine. 'In natural entities,' he writes, 'instantaneous changes are always the terms of motion. The reason of this is, that changes of this kind have for their terms Form and privation; as the generation of fire has' for its terms 'fire and not-fire,'—not-fire as its term *whence*, fire as its term *whither*. 'Now, between the Form and the privation there can be nothing intermediate, save by accident; that is to say, in so far as that which is deprived of the Form approximates more or less to the Form by virtue of some disposition for the Form, which disposition is intensified or diminished by continuous motion. Therefore, there must pre-exist a movement of alteration which is terminated to generation. Thus alteration has two terms,—the one in its own Category, (viz. the ultimate disposition which is necessary for receiving the Form), because alteration is motion in quality; and the other of another Category, viz. the substantial Form. In the same way illumination is the local term of the sun, which is an instantaneous change existing between the Form of light and its privation,—that is to say, darkness. Now, the ultimate term of any motion whatsoever that is measured by any period of time is necessarily in the last moment of time. Hence, since the substantial Form is a certain term of alteration, the substantial Form is necessarily introduced in the last moment of that time. But corruption and

[1] 'Nec oportet esse aliquod medium inter duos terminos, sicut non est aliquod medium inter tempus et terminum temporis. Inter duo autem *nunc* temporis est tempus medium. Unde dicunt quod non est dare ultimum *nunc* in quo fuit in termino *a quo;* sicut in illuminatione et in generatione substantiali ignis non est dare ultimum instans, in quo aer fuit tenebrosus, vel in quo materia fuit sub privatione formae ignis; sed est dare ultimum tempus, ita quod in termino illius temporis est vel lumen in aere, vel forma ignis in materia. Et sic illuminatio et generatio substantialis dicuntur motus instantanei.' 1^ae liii, 3, *c.*

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generation concur; for the generation of one is the corruption of another. Therefore, the term of the corruption of the one,—air, for example,—and the term of the generation of the other,—for instance, fire,—are necessarily in the last instant of the given time. Now, the term of corruption is not-being. Wherefore, in the last instant of the given time there is necessarily for the first time not-air, and for the first time fire. But, prior to the last instant of any given time, there is no admitting a penultimate; because between every two instants there is, according to the Philosopher, an intermediate time. Accordingly, there is no admitting a last instant in which there is air; but during the whole time that measures the alteration there was air, and in the last instant of that time there is for the first time not-air and for the first time fire[1].'

v. Again, in another place St. Thomas remarks: 'The expulsion of a Form denotes the term of that motion which is ordained to corruption, and the introduction of a Form in like manner denotes the term of that motion which precedes generation; because both generation and corruption are terms of motion. Now, everything that is moved, when it is in the term of motion, is disposed in accord with that to which the motion is ordained. Wherefore,

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[1] 'In rebus naturalibus mutationes instantaneae sunt termini motus semper; cujus ratio est, quia hujusmodi mutationes habent pro terminis formam et privationem, sicut generatio ignis ignem et non ignem. Inter formam autem et privationem non potest esse aliquod medium nisi per accidens; in quantum scilicet illud quod privatur forma, magis et minus appropinquat ad formam, ratione alicujus dispositionis ad formam, quae intenditur vel remittitur per motum continuum. Et ideo oportet praeexistere motum alterationis, qui terminetur ad generationem. Et sic alteratio habet duos terminos: unum sui generis, scilicet ultimam dispositionem, quae est necessitas ad formam, quia alteratio est motus in qualitate; et alium alterius generis, scilicet formam substantialem. Et eodem modo illuminatio est terminus localis solis, qui est mutatio instantanea existens inter formam luminis et privationem ejus, scilicet tenebras. Cujuslibet autem motus qui mensuratur aliquo tempore, oportet quod ultimus terminus sit in ultimo instanti temporis. Unde, cum forma substantialis sit quidam terminus alterationis, oportet quod in ultimo instanti illius temporis introducatur forma substantialis. Corruptio autem et generatio simul currunt, quia generatio unius est corruptio alterius. Oportet ergo quod in ultimo instanti illius temporis sit terminus corruptionis unius, ut aeris, et terminus generationis alterius, ut ignis. Terminus autem corruptionis est non esse. Oportet ergo quod in ultimo instanti illius temporis sit primo non aer et primo ignis. Sed ante ultimum instans alicujus temporis non potest accipi penultimum; quia inter quaelibet duo instantia est tempus medium, secundum Philosophum; et sic non est accipere ultimum instans in quo sit aer; sed in toto tempore mensurante motum alterationis erat aer, et in ultimo instanti ejus est primo non aer, et primo ignis.' *Quol. L.* vii, *a.* 9, *o.*

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since the motion of corruption tends to not-being and that of generation, on the other hand, to being; when a Form is introduced, the Form exists, but when it is expelled, it exists not. Further: As a Form is said to be introduced when first it exists and to be expelled when first it exists not; matter cannot exist without one or the other Form. Wherefore, in such case the expulsion of the one Form and the introduction of the other are simultaneous [1].'

vi. In another passage St. Thomas thus pursues the same idea. 'There is a difference,' he writes, 'between motion and change; seeing that by one and the same motion one thing that is indicated by an affirmation,'—that is to say, a positive entity,—'is rejected, and another indicated by a like affirmation,'—a positive entity,—'is acquired.' This special phase of the question,—viz. the difference between motion and change,—which is first introduced to our notice here, has a notable significancy in relation to the present question. 'For motion is from Subject to Subject, as says the Philosopher in the fifth Book of his *Physics*. Now, by Subject is meant this something or other designated affirmatively; as, for instance, white and black,'—not, that is to say, *white* and *not-white*, because *not-white* is negative in its designation, as is plain. 'Hence, by one and the same alterative motion the white is cast off and the black acquired. But in the changes, which are generation and corruption, the case is different. For generation is a change from not-Subject to Subject,—as, for instance, from not-white to white; while corruption is a change from Subject to not-Subject,—as, for instance, from white to not-white. Wherefore, in the rejection of one positive and the acquisition of another' by alterative motion, 'it must be understood that there are two changes, one of which is generation, the other corruption total or partial,' accordingly as the corruption is substantial or accidental. 'Thus, then, if in the transition from whiteness to blackness we consider the motion itself; the same motion is represented by the removal of the one

[1] 'Expulsio formae dicit terminum motus illius qui est ad corruptionem ordinatus; et introductio formae dicit similiter terminum motus illius qui praecedit generationem; quia tam generatio quam corruptio sunt termini motus. Omne autem quod movetur, quando est in termino motus, disponitur secundum illud ad quod motus ordinatur: et ideo, cum motus corruptionis tendat in non esse, generationis vero ad esse; quando forma introducitur, forma est; quando autem expellitur, non est. Et quia introduci dicitur forma quando primo est; expelli autem, quando primo non est; non potest esse materia sine forma hac vel illa; et ideo simul est ibi expulsio unius formae et introductio alterius.' 4 *d.* xvii, *Q.* 1, *a.* 5, *q.* 2, *o.*

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and by the introduction of the other. On the other hand, the same change is not indicated, but distinct changes which are mutually concomitant; seeing that there is no generation of the one without the corruption of the other[1].'

There now will follow three very important passages which conclude our quotations from St. Thomas touching this difficult and subtle question.

vii. 'Since every change,' writes the Angelic Doctor, 'has two terms that cannot exist together, (for every change tends towards the discontinuous,'—that is to say, towards a term *whither* which is disconnected from the term *whence*, 'as is said in the first Book of the *Physics*); in all motion or change there must be succession, because the two terms cannot coexist. Consequently, there must also be time, which consists in the numeration of a *before* and an *after*; wherein is contained the entire essence of succession. But, with regard to this one meets with a difference in different changes. For sometimes there is an intermediate between the term and the initial of motion, either by the intervention of dimensive quantity,—such as exists in the local movements of bodies and in the motion of augment and diminution; or by the intervention of virtual quantity, the division of which is discernible in the intensity and remission of some Form,—such as takes place in the alteration of sensile qualities,'—as, for instance, in more or less black, more or less sweet, etc. 'In these cases time of itself measures the motion; because there is a succession in arriving at the term, for the reason that this latter is capable of division,'—for instance into degrees of hardness, or miles of road. 'Sometimes, however, there is no intermediate between the term *whence* and the term *whither*; as is the case with those changes in which there is a change from a

[1] 'Differentia est inter motum et mutationem. Nam motus unus est quo aliquid affirmative significatum abjicitur, et aliud affirmative significatum acquiritur. Est enim motus de subjecto in subjectum, ut dicitur in 5 Physic.: per subjectum autem intelligitur hoc aliquid affirmative monstratum, ut album et nigrum. Unde unus motus alterationis est quo album abjicitur et nigrum acquiritur. Sed in mutationibus, quae sunt generatio et corruptio, aliter est. Nam generatio est mutatio de non subjecto in subjectum, ut de non albo in album; corruptio vero est mutatio de subjecto in non subjectum, ut de albo in non album. Et ideo in abjectione unius affirmati et adeptione alterius oportet duas mutationes intelligi, quarum una sit generatio, et alia corruptio vel simpliciter vel secundum quid. Sic ergo, si in transitu qui est de albedine in nigredinem, consideretur ipse motus; idem motus figuratur per ablationem unius et inductionem alterius; non autem significatur eadem mutatio, sed diversa, tamen se invicem concomitantes; quia generatio unius non est sine corruptione alterius.' *Verit. Q.* xxviii, *a.* 1, *c.*

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privation to a Form, and *vice versa*; as occurs in generation and corruption, in illumination, and in all instances of a like nature. With these changes likewise time is conjoined; since it is obvious that matter cannot exist at one and the same time under a Form and under its privation; neither can the air be at the same time subject to light and darkness. Yet this must not be taken to mean, that the exodus, or transition, from one extreme to the other is accomplished in time. But one of the extremes,—that is to say, that which precedes and is rejected in the change,—is connected with some motion or alteration, (as in generation and corruption), or with the local motion of the sun, (as in illumination); and in the term of that motion is included the term likewise of the change. In this respect such change is said to take place suddenly, or in an instant; because, in the last instant of the time which measured the antecedent motion that Form or Privation is acquired, not a vestige of which was there before[1].'

viii. The next passage is as follows. 'In all motion we must recognize succession and time in one way or another; for the reason that the terms of any motion whatsoever are mutually opposed and disconnected, as is plainly shown in the first Book of the *Physics*. Hence, every Subject of motion is necessarily understood to be first in the one term of motion and afterwards in the other; and so,

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[1] 'Cum omnis mutatio habeat duos terminos qui non possunt esse simul, (quia omnis mutatio est in incontingens, ut dicitur in 1 Physic.), oportet cuilibet motui vel mutationi adesse successionem ex hoc quod non possunt duo termini esse simul; et ita tempus, quod est numerus prioris et posterioris, in quibus consistit tota successionis ratio. Sed hoc diversimode in diversis contingit. Quandoque enim terminus motus est mediatus principio motus, vel secundum medium quantitatis dimensivae, sicut est in motu locali corporum et in motu augmenti et diminutionis; vel secundum medium quantitatis virtualis cujus divisio attenditur secundum intensionem et remissionem alicujus formae, sicut in alteratione qualitatum sensibilium: et tunc tempus per se ipsum motum mensurat: quia ad terminum successive pervenitur, eo quod divisibilis est. Quandoque vero terminus ad quem non est mediatus termino a quo, sicut est in illis mutationibus in quibus est mutatio de privatione in formam, vel e converso, ut in generatione et corruptione, et illuminatione, et in omnibus hujusmodi. Et in istis etiam mutationibus oportet annexum esse tempus, cum constet materiam non simul esse sub forma et privatione, nec aerem esse simul sub luce et tenebris. Non autem ita quod exitus vel transitus de uno extremo in aliud fiat in tempore; sed alterum extremorum, scilicet primum quod in mutatione abjicitur, est conjunctum cuidam motui vel alterationi, (sicut in generatione et corruptione), vel motui locali solis, (sicut in illuminatione); et in termino illius motus est etiam terminus mutationis. Et pro tanto mutatio illa dicitur esse subito vel in instanti, quia in ultimo instanti temporis, quod mensurabat motum praecedentem, acquiritur illa forma vel privatio cujus nihil prius inerat.' 1 *d.* xxxvii, *Q.* 4, *a.* 3, *c.*

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consequently, there is succession. Now, in the motions of bodies transition from one term to another occurs in two ways. In one way it occurs from instant to instant, as it were. But this cannot take place, except when the terms of motion are such as to be capable of admitting somehow an intermediary between them; just as between two instants there is an intermediate time. This can be plainly perceived in change of place and in alteration, in augment or diminution; and such motions are called continuous by reason of the continuity of that over which the motion passes, whose property it is to admit of more and less. In the other way transition is made from one term of motion to another, as from time to an instant. This occurs in motions whose terms are privation and Form, betwixt which it is plain that there is nothing intermediate. Hence, the transition from one term to another cannot take place in such wise as that it should ever be in neither of the extremes, but in the intervening time. The motions of generation and corruption are of this sort, as also illumination, and other similar instances; of which it must be said, that one term existed during the whole of the antecedent time, and the other in the instant at which that time is terminated. Now, changes of this kind are terms of a certain motion; as, for instance, the illumination of day is the term of the local motion of the sun. Hence, during the whole preceding time that the sun is moving towards the point directly opposite to it, there was darkness; but on the very instant that it arrives at that point, there is light. It is precisely the same in the instance of generation and corruption, which are the terms of alteration. Because, then, there is nothing intermediate between time and an instant, and because it is impossible to admit of any instant immediately preceding the ultimate of time; hence it is that, in changes of this kind, there is a transition from one extreme to the other without any intermediate. Neither is it possible to admit a last time[1],'—because *a last time* denotes an instant, whereas *a time in which last* does not,—'in which the change was in the term *whence*; though there is a last time, which is terminated at the instant when it is in the term *whither*. Wherefore, changes of this sort are said to be instantaneous[2].'

[1] Since the *Editio princeps* confirms the reading, *tempus*; the writer has explained it as best he could. But his own conviction is, that the true reading is *instans*, which is more consonant with the argument and with parallel passages.

[2] 'In omni motu oportet intelligere successionem et tempus per aliquem modum, eo

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ix. Lastly, St. Thomas elsewhere repeats the same solution in somewhat different terms. These are his words: 'In bodily entities the two terms of motion or change admit of a twofold bearing. The one is, that it is possible to assign an instant in which the term *whither* exists for the first time, and another instant in which the term *whence* exists for the last time. Accordingly, since there is an intermediate time between any two given instants, it follows that from one term of motion to another there is made a transition through time. Wherefore, such change takes place in time, not in an instant. Now, this occurs, when between the two terms of motion it is possible to admit something intermediate; as, for instance, between white and black and between the being *here* and *there*. But there are some terms of change, between which it is impossible to admit any intermediary,—as, for instance, between white and not-white, between fire and not-fire, between light and darkness; because affirmation and negation are in their very nature immediate. The like holds good of privation and Form in a determinate Subject. In such' changes, 'although it is possible to admit an instant in which the term *whither* first exists; it is nevertheless impossible to admit an instant in which the term *whence*

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quod termini cujuslibet motus sunt sibi oppositi invicem et incontingentes, ut patet in 1 Physic. Unde oportet quod omne mobile intelligatur esse primum in uno termino motus, et posterius in altero; et sic sequitur successio. Sed transire de uno termino ad alterum in motibus corporalibus contingit dupliciter. Uno modo sicut de instanti in instans. Hoc autem esse non potest, nisi quando sunt tales termini motus inter quos est accipere aliquo modo medium, sicut inter duo instantia est tempus medium, ut patet in loci mutatione, et alteratione, augmento aut diminutione. Et hi motus dicuntur continui propter continuitatem ejus super quod transit motus, cujus est plus et minus accipere. Alio modo transitur de uno termino motus in alium, sicut de tempore in instans. Et hoc accidit in motibus quorum termini sunt privatio et forma, inter quae constat medium non esse: unde non potest sic transiri de uno extremo in alterum, ut quandoque in neutro extremorum sit, sicut transitur de instans *sic* in instans, ita quod in neutro est instantium, sed in medio tempore. Et hujusmodi motus sunt generatio et corruptio, et illuminatio, et hujusmodi; in quibus oportet dicere, quod unus terminus erat in toto tempore praecedente, et alius in instanti ad quod tempus terminatur. Hujusmodi autem mutationes sunt termini motus cujusdam, sicut illuminatio diei est terminus motus localis solis; unde in toto tempore praecedente quo sol movetur ad punctum directae oppositionis, erant tenebrae; in ipso vero instanti quo pervenit ad punctum praedictum, est lumen. Et similiter est de generatione et corruptione quae sunt termini alterationis. Et quia inter tempus et instans non cadit aliquod medium, nec est aliquod instans accipere immediate praecedens ultimum temporis; inde est quod in hujusmodi mutationibus absque omni medio transitur de uno extremo in aliud; nec est accipere ultimum tempus (*instans*?) in quo fuerit in termino *a quo*, sed ultimum tempus, quod terminatur ad instans in quo est in termino *ad quem*. Et ideo hujusmodi mutationes instantaneae dicuntur.' *Quol. L.* ix, *a.* 9, *c.*

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last exists. For since between any given two moments there is an intermediate time; it would follow that, during that intervening time, it,'—i. e. the subject of the change, 'would be in neither of the two extremes: which is impossible, since the extremes are altogether immediate. Since, then, that instant in which the term *whither* first exists is the term of a portion of time; it must be said that the term *whence* remains during the whole of the time preceding. Consequently, since between the time and the instant which is the term of that time there is no time intermediate; the transition that is made from one extreme to the other is not made in time, but in an instant. For the term *whence* first ceases to be and the term *whither* begins to be' in one and the same instant. 'Changes of this kind are said to be instantaneous; as, for example, illumination, generation and corruption [1].'

It now remains to give a methodical summary of the entire doctrine of the Angelic Doctor touching this important question, as contained in the above nine passages. The author is not sorry that an adequate solution of the difficulty proposed can be fully obtained only by this elaborate investigation; because it will necessarily elucidate in an appreciable manner the Peripatetic doctrine touching the substantial Form. When the reader has made himself master of the proposed exposition, he will do well to revert to the said quotations which form its basis. In order to render the task easier, the number of the quotation, or the numbers of the quota-

[1] 'In rebus corporalibus duo termini motus vel mutationis dupliciter possunt se habere. Uno modo quod sit assignare instans in quo terminus *ad quem* primo est; et aliud instans in quo terminus *a quo* ultimo est. Et sic, cum inter quaelibet duo instantia sit tempus medium, sequitur quod de uno termino motus in alium fiat transitus per tempus. Et sic talis mutatio est in tempore, et non in instanti. Hoc autem contingit, quando inter duos terminos motus est aliquod medium accipere, sicut inter album et nigrum, et inter esse hic et ibi. Sed aliqui termini mutationis sunt inter quos non est accipere medium, sicut inter album et non-album, inter ignem et non-ignem, inter tenebrosum et luminosum; quia affirmatio et negatio sunt secundum se immediata: et similiter privatio et forma in subjecto determinato. Et in talibus licet sit accipere instans in quo primo est terminus *ad quem*, non tamen est accipere instans in quo ultimo est terminus *a quo*. Cum enim inter quaelibet duo instantia sit tempus medium, sequeretur quod, in illo tempore medio, in neutro extremorum esset; quod est impossibile, cum sint extrema omnino immediata. Oportet ergo dicere, quod cum illud instans in quo primo est terminus *ad quem* sit terminus alicujus temporis, in toto tempore praecedenti duret terminus *a quo*; et sic, cum inter tempus et instans, quod est terminus temporis, non sit tempus medium, non fit transitus de una extremitate in aliam in tempore, sed in instanti. Primo enim desinit esse terminus *a quo*, et incipit terminus *ad quem*. Et hujusmodi mutationes dicuntur esse instantaneae, sicut illuminatio, generatio, et corruptio.' *Quol. L.* xi, *a.* 4. *c.*

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tions, in which the particular point of doctrine is to be found, will be given.

All motion that is corporal and sublunary, (for of such only is there now question), requires two terms, or extremes, with something in some way or another continuous between them. By a *term* is meant a boundary or limit; therefore, the two terms of motion are the two realities, whatsoever these may be, that limit or hem in motion. That there must be two such terms, is evident; for there must be something from which motion commences, and something at which it comes to an end. Thus, in the instance of a railway-train, there is the *terminus* from which the train starts, and the *terminus* whither it tends and where it stops. In like manner, in rifle-practising the barrel of the rifle would be the term whence the motion of the ball commenced, and the target would be that to which it was directed and where it ought to be arrested. In both these examples,—as, indeed, in all cases of corporal motion,—the movement itself is contained within the limit, or *term*, of these two points which constitute its two extremes. The point, or something, from which the motion starts is called by the Scholastics the *terminus a quo*, which has been here rendered into English *the term whence;* while the point, or something, at which the motion ceases, is denominated by the School the *terminus ad quem*,—in its adopted English equivalent, *the term whither*. Motion may, therefore, be fitly represented by a line which begins and ends with a point,—its two extremes, or terms. Indeed, it is usual to represent motion geometrically after this manner. Furthermore: In the idea of motion is essentially included something continuous that connects, as it were, the two terms. This is motion specifically so called;—the space through which the train moves in the one example, the trajectory of the ball in the other.

From the above declaration of the nature and constituents of motion it follows, that in the concept of motion is essentially included the idea of succession, (vii, viii). For it is plain that there is in all motion a real *before* and a real *after*, 'in which consists the whole essence of succession.' The same obviously holds good of a line.

Consequently, in the idea of all corporal motion is necessarily included, or at least connoted, the idea of time which is the measure of motion in sublunary bodies, (vii, viii). As, therefore, motion and succession in motion are fitly represented by a line; so there is a striking analogy between time and a line, (i).

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Time consists of two elements, as it were; and here it is that its analogy with a line proves to be of some service. For a line is limited between two points which are continuous with the line. The line between is actually continuous; but it contains potentially an indefinite number of points. A point is indivisible; but a line is indefinitely divisible. In like manner, any given portion of time is limited between two instants which are continuous with it. This intervening time is *actually* continuous, but *potentially* contains an indefinite number of instants. An instant is a point of time and indivisible; but any period of time is indefinitely divisible. Hence, 'In time there is something that is indivisible,—viz. an instant; and something that is enduring,—viz. time[1].' It will be of use to notice, that the word *time*,—like the word *motion*,—is sometimes used in a specific sense to express exclusively the duration between two instants; sometimes generically, as inclusive of the two instants. It will be particularly important to bear this in mind, while studying the above nine quotations from the Angelic Doctor.

As points of a line, if in act, are not contiguous; so in time *actual* 'instants do not follow continuously,' (ii). If they could, there would be no reason why they should not formally exist in time.

It follows as a consequence, that no instant is *immediately* preceded by another instant; just as no point is *immediately* preceded by another point. By *immediately* is to be understood the absence of anything intermediate,—which means, in other words, *undividedly*; for, if there is division, there must be something between. But a point and a moment are divisions of the continuous; therefore, they do not admit of immediate sequence. Hence, it is impossible that there should be a penultimate instant,—that is to say, an instant immediately prior to the last instant,—in any given period of time, (ii, iv, viii). Wherefore, between any two given instants of time there must be something intervening; and such intermediate is time in its specific, or restricted, signification as a motion, (i, iii, iv). As time, specifically so called, begins from its first instant, like the line which commences from its generating point; so, it is terminated by an instant, just as a defined line is arrested at a point, (ii). Between time in its specific signification and any

[1] 'In tempore aliud est quod est indivisibile, scilicet instans; et aliud est quod duret, scilicet tempus.' 1^ae^ xlii, 2, 4^m^.

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instant there is nothing intermediate, (i, iii, viii); hence, the two are immediately conjoined,—in other words, continuous. Since time is continuous; the last potential instant of the preceding portion of time, (in the event of a division, and time is divided by contingent facts), will necessarily be the first point of the remaining portion, (ii); just as, if we conceive a line to be divided in two, the last point of the antecedent Section will become the first of the consequent.

Hence it follows, as an obvious corollary, that the ultimate term of every motion measured by time is necessarily in the last instant of that time, (iv).

All change is a species of motion according to the generic signification of the latter; for it contains all the elements which are discoverable in motion, viz. a term *whence*, a term *whither*, and something continuous,—a sort of process,—connecting the two terms; though this continuous and connecting *something*,—this process,—is not necessarily similar to local motion. There is a marked difference, however, between motion and change, even in those instances wherein the two are physically identified. All change connotes motion; but not all motion connotes change, save perhaps analogically. Further: Motion *in recto* designates the transit and *in obliquo* the terms; whereas change denotes the two terms *in recto* and *in obliquo* the transit. But,—to limit our attention, (as the nature of the difficulty now under consideration suggests), to the particular changes of generation and corruption,—motion is always from Subject to Subject, in other words, from positive to positive; while the change of generation is from not-Subject to Subject, and that of corruption from Subject to not-Subject. The distinction will be better understood by introducing an illustration. There is a motion, we will say, of the fruit of the black-currant tree from green to black. The motion, then, is evidently from a positive,—green,—to another positive,—black. But this one motion includes two changes, viz. the corruption of the green and the generation of the black. The green which existed in the term *whence* of motion ceases to be in the term *whither*;—that is to say, the change of corruption passes from Subject to not-Subject, or from positive to negative. The black, on the contrary, which did not exist in the term *whence* of motion, begins to exist completely in the term *whither*,—that is to say, the change of generation passes from not-Subject to Subject, or from negative to

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positive. The threefold distinction may be symbolically represented after this manner: Motion is from A to B; Corruption is from A to not-A; Generation is from not-B to B. Hence it follows, that the same motion terminates in two concomitant changes,—those of corruption and generation,—which are in inverse ratio; so that in intermediary changes, (such as alterative, or accidental), the corrupting composite decreases in proportion as the generating composite increases, relative to the perfectness of each, (vi).

From the above exposition it is plain, that the two Forms, —the one that ceases to be, and the other that commences to be, in the term *whither* of such motion,—cannot possibly co-exist, (vii, viii). Indeed, the same may be predicated in general of the two terms of all motion whatsoever, considered exclusively as terms of motion.

There are two kinds of generative and corruptive change. In one kind there can be something intermediate between term and term; in the other kind there cannot be anything intermediate between the two, (vii, viii, ix). This distinction involves distinct characteristics proper to each kind. Let us, therefore, consider the two apart.

a. To begin with those corruptive and generative changes wherein there can be something intermediate between the two terms: let us take, by way of instance, the change of water from cold to hot,—assuming, with or without leave of the physicists, that cold may be metaphysically regarded as a positive quality. Between hot and cold there is, no one can doubt, an intermediate, —men ordinarily call it, lukewarm,—and the heat is divisible, constantly ascending in degree till it reaches boiling point. In like manner, under the influence of heat wax becomes gradually softer and softer, till it liquifies; and a bar of iron becomes redder and redder, till at last it arrives at a white heat. In a similar way there is something intermediary between the green and black of the currant, viz. a middle state in which the fruit appears of a dusky red. Alterations generally, which are changes in the qualities of bodies, belong to this kind.

Now, in all changes such as we are discussing it is true that time is the measure; because all change is motion, motion necessarily involves succession, and time is the measure of succession. But time in the strictest sense measures this kind of changes, 'because there is succession in arriving at the term' *whither*, 'for

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the reason that it is capable of division,' (vii), in the way explained above. Hence, in local change,—to adopt one of the illustrations of the Angelic Doctor,—it is a common phrase, that we shall get *in time* to our journey's end, and again, that we reached our destination *by stages*. 'These motions are called continuous, by reason of the continuity of that over which the motion passes,' (viii),—in alterations, for instance, the continuity of the accidental Form.

In this kind of generative and corruptive change the two terms can be in two instants; because, as there is an intermediate something between them, they can exist in two separate points of time, (ix); and the continuous time between them would measure the intermediary between the two terms. 'Wherefore, such change takes place in time, not in an instant.'

For a like reason, in this class of changes it is possible that the transition, or motion, should be in neither of the two terms; that is to say, while it is in its course from one term to another, (viii). Thus, for instance, should a pedestrian walk from London to Henley, the motion of his onward steps, from the time that he gets outside of London till he reaches Henley, will be neither in London nor in Henley,—the two terms of his journey. So,—to take instances already adduced of an accidental Form,—the black currant passes gradually through a ripening process during which it is neither green nor black, though the motion is ever going on within the plant; and the water passes through many degrees in which it is neither cold nor boiling.

b. We now arrive at the consideration of the second kind of generative and corruptive changes, in whose case there is nothing intermediate between the two terms. It is to this class that the objection now under review is restricted, for it embraces all changes that terminate in substantial generation and corruption. Now, first of all it is worthy of notice that, when there is nothing intermediate between term and term, the change is instantaneous, (iii, vii, viii, ix). Further: Instantaneous changes are always simple terms of motion, (iv); that is to say, they are always *only* terms of motion, as contradistinguished from gradual changes which include the alterative motion.

Though, absolutely speaking, there is nothing intermediate between the two terms of substantial generative or corruptive change; yet there is something intermediate by accident,—that is to say, there are certain alterations and accidental dispositions of

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the Subject, which incline it towards receiving the one Form and rejecting the other, (iv). This alteration has two terms. The one consists in the completeness, or perfection, of the new qualities and dispositions and is, accordingly, in the Category of Quality. Such is the ultimate disposition of the matter. The other is outside the proper category of the Subjects of these alterative changes, though their final cause. This is the substantial Form. Thus, for instance, the qualities of matter in a seed undergo alteration, after having been sown in the ground. The formal term of that gradual alteration is the ultimate disposition of the matter for the reception of the plant-Form; while the completorial term, as it may be called, and final cause of the disposition is the plant-Form itself as terminating the generative motion, (iv). This should be carefully understood; because the former change is gradual, while the latter is instantaneous, and there is danger of confounding the two.

In all substantial mutations of bodies, there are included in one way or another three changes,—two principal, and one subsidiary. These are, the change from the non-existence to the existence of the new Form, the change from the existence to the non-existence of the original Form, and lastly the changes, or alterations, of the accidents that inform the matter. This last change may be omitted in our present examination. There remain, then, the two changes of generation and corruption; in the former of which the change is from privation to Form, while in the latter it is from Form to privation.

Now, it is impossible that Form and its privation should co-exist, (vii), because the one is an affirmative and the other its negative; and these cannot co-exist, (ix), because A and not-A are dichotomic.

Again: Since the change is immediate, it is impossible that the motion, or transition, should be in neither term, (viii, ix). Hence, all through the change there must be either Form or its privation; for there is nothing intermediate, (iv). This holds good of both Forms,—of the Form of the corrupted, no less than of the Form of the generated, substance.

Further: It follows that generation and corruption,—in other words, the introduction of the new Form and the expulsion of the original Form,—are the terms *whither* of the substantial change, (v).

Now, immediate changes, like all other changes, are measured by time, because there is succession; yet the change itself is instan-

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taneous. As St. Thomas puts it very clearly, 'the transition is made from one term of motion to another, as from time to an instant,' (vii, viii). To illustrate by the help of a previous example: —The substantial Form of the seed remains till the last instant of the motion, when it ceases to be; and the plant-Form continues non-existent throughout the whole time of motion till the concluding instant, when it begins to be. Wherefore, during the whole of the preceding time except the last instant, the term *whence* remains, (i); and during the whole of the preceding time except the last instant, the term *whither* is non-existent.

It has been already pointed out that, in all generative and corruptive changes,—that is to say, in all changes which terminate in generation and corruption,—generation and corruption are concomitant changes, or concur. Hence, the same motion terminates in both generation and corruption. Consequently, the first existence of the new Form and the first non-existence of the original Form concur in the last instant of the time of motion, (iv).

Since the two terms,—generation and corruption,—in substantial change are immediate; it is impossible to assign a last instant in which the term *whence* (the original, receding, Form) finally exists, (ii, iii, viii); for, if this were possible, the two terms of the change would not be immediate; since there is an intermediate between instant and instant, which would involve an interval between the final existence and first non-existence of the same Form. In like manner, it is impossible to assign the final non-existence of the new Form to a given instant; for this would suppose an interval and corresponding intermediate between non-generation and generation, i.e. between the non-existence and existence of the new Form. But in both cases it is possible to assign the last *time;* because time is continuous, (iii, viii, ix). Hence it is concluded, that in substantial corruption the original Form remains during the whole time of alterative motion and of change up to the last instant. In that same last instant the old Form recedes, and the new Form is first introduced. Consequently, there is nothing mediate between A and not-A, or between not-B and B; while not-A and B are simultaneous terms of the twofold change of the one motion in the last instant.

If the doctrine of the Angelic Doctor, developed in the preceding pages, be true, (and, if it is not, let it be refuted); the answer to the proposed difficulty is simple. When it is assumed in the *Major*

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Premiss that, *according to the Scholastic doctrine touching the substantial Form, either there is a moment of time in which the two substantial Forms co-exist in the same Subject, or there is an interval of time during which the Subject is denuded of any substantial Form whatsoever;*—the proposition must be met by a direct negative; forasmuch as the disjunction is not logically exhaustive. The proof of the *Major* must be distinguished. *Either, in instant* 2, *f and f' co-exist, or f exists in instant* 1 *and f' in instant* 2, or f exists in instant 1 + t, (that is to say, the continuous time of which instants 1 and 2 are the terms),—granted; *Either in instant* 2 *f and f' etc.*, without the additional member of disjunction,—denied. It should be borne in mind, that time for us men is measured by the motion of the celestial bodies which is continuous. Time is, therefore, naturally continuous, and has been broken up (so to say) into portions, in order to be a measure conformable to the interjectional nature of contingent facts and actions. Hence, discrete time is a sort of accommodation to the character of the subjects of measurement. Instants are the terms of a duration, or section of time.

IV. It has been objected, that the substantial Form cannot give specific being to matter, even according to the teaching of the Scholastic Philosophy. For, as St. Thomas and the Doctors of the School in general have accepted from the Philosopher and repeatedly enforce, there are two acts of created substance. By the first act each substance is constituted in being; while by the second act it is constituted in its natural operation. Now, the simple act of being is not differential; for it is first necessary that a thing should be, before it can be such or such. Then again, the species of an entity is equivalent to its nature. But nature, according to Scholastic teaching, is the principle of operation. Therefore, the substantial Form is the first act by which being is; the natural Form is the second act by which that being is constituted in such or such a specific nature which is the principle of its essential operation. It follows, that the substantial Form does not specifically determine the matter; and that, to this end, there is need of another which may be appropriately called the natural Form.

ANSWER. i. It is impossible that a finite entity should be constituted in being, without its simultaneous constitution by the same act in its specific and individual nature; otherwise, all finite being, *as actual or existent*, would be first, in order of nature at the

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least, transcendental and undifferentiated, and afterwards reduced to distinct essence by the real actuation of another Form. This once admitted,—to omit other patent absurdities involved in the hypothesis,—there could be no possible reason for excluding a third act and third Form, by which each individual is constituted under its species. Hence, Aristotle, with that practical common sense which is the characteristic of all true philosophy, tells us in his *Categories*, that *first substances*, (that is to say, individuals constituted under a determinate species), are the real foundation of all *second substances*, (that is to say, of all species, genera, and *à fortiori*, of the transcendentals). It is impossible even to conceive a thing really in act, and yet indeterminate. If an actual entity must be individual, we have yet stronger reason for affirming that it must be specifically determined; for individuation constitutes division of the ultimate species which, accordingly, it presupposes. Neither can the constitution of a thing in Being, (that is to say, in its essence), and the constitution of the same in its specific nature be even metaphysically distinguished; since the two are identical according to the four causes of Being. If we compare the specific nature with being, (that is to say, existence), there is indeed room for a metaphysical distinction, but one far enough removed from that which the objector presumes. For existence connotes individuation; and individuation presupposes a specific nature.

ii. The proposition, that *it is necessary for a thing first to be, before it can be such or such,* is conceptually true; because the human mind naturally begins with the more universal, and thence descends to the more definite and contracted. It is possible, by process of abstraction, to conceive a thing as Being, (not,—mark,—as being), without conceiving its being such or such; but we cannot conceive a thing to be really such, without in some sort conceiving it to be. Hence, there is a kind of conceptual priority of order which the concept of Being can claim over the concept of the specific nature; but there is nothing whatever to justify our transforming this purely conceptual into real priority, or attributing Being to one Form and the specific nature to another. On the contrary, if being is assumed in its participial sense as significative of existence, such a hypothesis would suppose the individuation of a thing prior to its specification; if assumed in its nominative sense as identical with entity, or essence, the same hypothesis introduces two Forms for that which is absolutely one act.

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iii. The Doctors of the School never taught that being is the first act, and the specific nature, or principle of operation, the second act; but that the constitution of an entity outside its causes in its own specific and individualized nature is the first act, while its *actual* natural operation is the second. If the theory in question were true; this last would be the third act, not the second. It is further to be noted, that the author of this objection identifies act with Form; but, while it is true that every Form is an act, it is not true that every act is a Form, save in a very analogical sense. See Proposition clxxiv.

iv. Further: *To be* necessarily presupposes Being, or at least connotes the latter. But Being is essence. That same essence, conceived as the principiant of natural operation, is the specific nature. There is no possible foundation, therefore, for any distinction between the two.

v. This novel introduction of what is called a *natural Form* is probably a necessity for the particular dynamic theory which it is intended to render conceptually complete; but, forasmuch as the said theory exhibits that which is accidental to the primordial Subject as the sole constitutive of the specific nature of material substance, we may safely be spared any further inquiry into its demerits.

V. Against the last argument adduced in favour of the present Proposition it has been objected as follows: From the *Antecedent*, that *the constitution, integration or completion, of bodily substance is an absolute necessity*, in the hypothesis that the actual order of nature was intended and willed; the conclusion has been drawn, that *the existence of material Forms is*, under the same hypothesis, *an absolute necessity*. But the conclusion does not appear to be warranted by the premisses. For, in the first place, the whole force of the argument depends upon the supposition that there is such a thing as primordial matter, which most adversaries of the Peripatetic philosophy would be disposed to call in question. Then again, even assuming the existence of a primordial matter, the supposed fact would not render the existence of substantial Forms an absolute necessity; for why should not this primordial matter become actuated by a definite collection of accidental Forms?

Answer. As to the first part of the objection it must be observed, that proofs of the existence of a primordial matter have been already

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given in the preceding Chapter; and it would be impossible to make progress in any science, if no account is to be made of truths already demonstrated.

The second part of the objection, though implicitly treated elsewhere, merits further consideration. It must be said, then, that no accident, or collection of accidents could satisfy the final cause of a substantial Form,—that is to say, the constitution, integration, completion, of bodily substance. The *Antecedent* is proved in various ways. The constitution, etc. of bodily substance, *as such*, means nothing more or less than the complete constitution of the substantial essence, or nature. But no essence can be completed, so as to become truly and of itself one, by a potentiality and act which belong to distinct and opposed categories. *A fortiori*, no essence which is absolute,—of itself, in its intrinsic constitution,—in its own right,—can be essentially constituted in itself by any accidental addition. Again, to put the same argument under a somewhat new form:—Every potentiality is only fulfilled by an act correlative with itself and with its own specific nature. But primordial matter is a substantial potentiality. Therefore, it can never be fulfilled by any accidental Form or collection of accidental Forms; for no mere collection can overleap the common essential nature of its several constituents. Lastly: If this accidental Form or compost of accidental Forms, which is supposed to complete material substance, be really (as it must be) accidental, it occurs to inquire: What is the Subject of this accident, or congeries of accidents? It cannot be an accident to the supposed integral composite constituted by itself and primordial matter; because this would make the accident an accident to itself, since itself enters intrinsecally and primarily into the constitution of the composite, as being according to the hypothesis the constitutive act of such composite. Can it, then, be considered as an accident to primordial matter? But this will not square with the hypothesis, that it essentially enters into the constitution and completion of material substance. It may be urged, perhaps, that it is said to be accidental, because primordial matter can exist with or without it. Here, however, there is a noticeable ambiguity. Either the assertion may mean that primordial matter can exist without this particular accidental Form, or it may mean that primordial matter can exist apart from any accidental Form whatsoever. If the former meaning is intended, the fact would not secure the accidental nature of the Form; since primordial matter can

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exist without this or that particular substantial Form. If we are to understand the proposition in the latter sense, it must be denied; since, in the hypothesis that bodily substances are constituted by accidental Forms as acts of primordial matter, it is impossible *de potentia absoluta* that primordial matter should exist save under the actuation of one or other of such Forms. It may again be urged, that the said Form is said to be accidental because of its dependence on matter. But the same reason would go to prove that primordial matter itself is accidental; since the dependence of the latter on its fellow constituent is, if anything, more absolute than that of the actuating Form. Moreover, for the same reason, the parts or members of a body would claim the name of accidents; since there can be no doubt that they exhibit a mutual and necessary dependence. There is, then, one kind of dependence, and there is another kind of dependence; and there is nothing, therefore, repugnant in an incomplete substance depending on another as Subject within the limits of its own Category. Finally: Such an accidental information would satisfy the requirements neither of the final cause of the substantial Form nor of its own:—not of the final cause of the substantial Form, because (as has been already urged) from such information there could never result one substantial nature; not of its own final cause, for this is the accidental perfecting which is completorial of the already constituted substance.

Wherefore, as Suarez justly observes, 'the philosophical doctrine touching substantial Form is most certain.'

ARTICLE III.

The Eduction of bodily substantial Forms out of the potentiality of matter.

There is no part of the Scholastic doctrine touching the constitution of bodies, which has been generally considered more obscure than the question now proposed for discussion. Some not over thoughtful, some impatient, very many prejudiced, inquisitors have not scrupled to pronounce the words that head this Article to be a sounding phrase without meaning; whereas in reality, of all the conclusions connected with the essential constitution of bodies they virtually contain conclusions the most momentous and most pregnant with principles directive of physical research. It should be added, that nowhere perhaps is the harmony between metaphysics

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and modern physical discoveries more satisfactorily established, than in the doctrine to the exposition of which this Section of the present Work is devoted. It will be the object, therefore, of the writer to evolve, in a series of Propositions, what Aristotle and the Doctors of the School mean, when they affirm that material substantial Forms are educed, or evolved, out of the potentiality of matter. At the end of the Article the results of the investigation will be set before the reader in the form of a summary.

Previously, however, to entering upon the proposed inquiry, it is necessary to premise that the human soul, though a substantial bodily Form, is excluded from the discussion. This exclusion is due to its singular nature, by which it is essentially distinguished from all other substantial Forms of bodies. Psychology teaches by demonstrative proof, that the human soul alone of all such Forms possesses intellect and will properly so called, by reason of which faculties it lays claim to a place, albeit the lowest, among spiritual entities. We are likewise taught by the same science no less than by the general verdict of mankind in every age, that the human soul has a subsistence of its own and, in consequence, survives its separation from the body at the time of death. In these respects it is exceptionally distinguished from all other corporeal Forms. In order, then, to obviate the necessity of a repetition of the same conditional clause in the Enunciation of each Proposition, let it be understood once for all, that the present investigation embraces all substantial Forms of either inanimate or animate bodies with the single exception of the human soul. Every Proposition in the present Article must be considered as virtually subject to this modification.

PROPOSITION CLXXVII.

Since the substantial Forms of bodies are acts of primordial matter and have no independent existence; it is metaphysically impossible that they should become the single term of either creative or productive action.

PROLEGOMENON I.

It has been shown in the *hundred and seventy-fourth* Proposition, that every Form is an act. But there is an essential difference in Forms. Some are Forms that are acts, so to say, to themselves, and subsist exclusively in their own right. Others there are, which are

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acts of another and naturally subsist, together with a compartner, in the composite; yet are also substantial acts in themselves, and in consequence capable of a separate subsistence. Others, finally, are exclusively acts of the composite, having no possible subsistence save in the composite. Under the first class are included all purely spiritual substances. To the last class belong all substantial Forms of bodies, with the solitary exception of the human soul which constitutes the second class. The present Proposition concerns itself only with the last class.

Prolegomenon II.

By the phrase in the Enunciation,—*that bodily substantial Forms cannot possibly become the single term of either creative or productive action*,—is meant, that neither the Creative Action of the First Efficient Cause nor the productive power of secondary causes can terminate in the separate creation or separate production of any one of these Forms,—that is to say, in its creation or production otherwise than through the medium of, and in conjunction with, matter.

The Proposition is thus proved.

That which involves a contradiction in terms is a metaphysical impossibility. But that substantial Forms should become the single term of either creative or productive action, involves a contradiction in terms. Therefore, etc. The *Major* is evident: the *Minor* is thus proved. That what is exclusively an act of matter should be not an act of matter, is a contradiction in terms. But that a bodily substantial Form should be the single term of either creative or productive action, is equivalent to its being an act of matter and not an act of matter. Therefore, etc. The *Minor* is thus declared. It belongs to the essential nature of a substantial bodily Form such as we are now considering, that it should be exclusively an act of matter, because it has no subsistence of its own; while, according to the hypothesis here combated, it could not be the act of matter, since it would be created or produced (as the case might be) without the intermediary of matter and as an independent entity.

The above argument needs explanation and illustration. To begin with the latter:—The earth is an oblate spheroid, as we are told,—in other words, a sphere flattened at the poles; since its polar diameter is shorter than its equatorial by some twenty-four miles. This shape, or figure of our globe,—like other figures of

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other bodies,—belongs to the fourth species in the Category of Quality. It is, therefore, an accidental Form, and *immediately* informs the quantity by which the earth is actuated; nor could it *de potentia absoluta* be produced in existence, save in conjunction with the quantity of which it forms the limit. To take another clearer example from art:—Let us set before us a porcelain vase. It exhibits an elegantly proportioned shape which the skilled manufacturer has given to it. What was the process of production? The craftsman has evolved out of the clay,—the chosen material of his vase,—that particular form which he had previously conceived in his mind as his model. That figure is so essentially embedded in the clay, that it is absolutely impossible to separate the former from the latter. Not even an infinite power could give to it an independent existence. The workman developes it out of the material and, simultaneously with the perfect development of the form, produces his vase. After a somewhat similar manner are the substantial Forms of bodies evolved out of the potentiality of matter. All that they are, they are acts of matter constituting the composite. They are immersed in matter, to borrow a favourite expression of St. Thomas; so that outside of it they are, they can be, nothing. Hence, the Creative Action of the First Cause and the productive power of secondary efficient causes formally terminate at the integral composite, just as the operation of the manufacturer is directed to the production of the vase; and, like as the latter causes the result by working his artistic shape out of the matter, so the First Cause concreates (in whatsoever cases He has created, about which we shall see later on) matter with its Forms, (since neither can exist separately or be created separately), while secondary causes in the established order of nature evolve Forms out of matter by direct operation on the matter already pre-existing.

The truth of this Proposition is further proved by an argument derived from the nature of these Forms. Bodily substantial Forms have no subsistence of their own. They only subsist in another,—that is to say, in the Subject which they inform. But, if they were capable of becoming the single, or adequate, term of either creative or productive action, they must necessarily be capable of an independent subsistence; since that which is the sole term, or result, of creation or production must exist in itself, seeing that it is made independent of anything conjunct with it.

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The present Proposition is in strict accord with the teaching of the Angelic Doctor. In an Article wherein he is discussing the problem, *Whether creation has anything to do with the works of nature and art*, he solves the problem as follows: 'This difficulty has arisen by reason of Forms which, as some contended, do not begin to exist by natural agency, but had previously existed in matter, thus maintaining the latent existence of Forms. And they fell into this error from an ignorance of the nature of matter; since they did not know how to distinguish between potentiality and act. For, whereas Forms pre-exist in matter potentially, they maintained that they pre-existed simply. Others, again, maintained that Forms are given or caused by a spiritual agent in way of a creation; and, according to this opinion, creation accompanies every natural operation. Now, they fell into this error from an ignorance about Forms. For they did not take into consideration, that the natural Form of a body is not subsisting, but rather that by which something exists. Wherefore, since to be made or created properly appertains to a subsisting entity alone; it is not the part of Forms to be made or created, but to have been concreated. That, however, which is properly the production of natural agency, is the composite which is made out of the matter. Hence, there is no admixture of creation in the works of nature; but, prior to natural operation, there is something presupposed [1],'—that is to say, there is a pre-existing Subject of natural operation (matter); and, consequently, the result is not a creation but a production. The doctrine maintained in the latter part of the above quotation will be confirmed and enucleated in the next Proposition.

Corollary.

Since substantial Forms cannot become the adequate term of creative action, and since primordial matter is in precisely the same

[1] 'Haec dubitatio inducitur propter formas, quas quidam posuerunt non incipere per actionem naturae, sed prius in materia extitisse, ponentes latitationem formarum. Et hoc accidit eis ex ignorantia materiae, quia nesciebant distinguere inter potentiam et actum. Quia enim formae praeexistunt in materia in potentia, posuerunt eas simpliciter praeexistere. Alii vero posuerunt formas dari vel causari ab agente separato per modum creationis; et secundum hoc cuilibet operationi naturae adjungitur creatio. Sed hoc accidit eis ex ignorantia formae. Non enim considerabant quod forma naturalis corporis non est subsistens, sed quo aliquid est. Et ideo cum fieri et creari non conveniat proprie nisi rei subsistenti, . . . formarum non est fieri, neque creari, sed concreatas esse. Quod autem proprie fit ab agente naturali est compositum, quod fit ex materia. Unde in operibus naturae non admiscetur creatio, sed praesupponitur aliquid ad operationem naturae.' 1^a^ xlv, 8, *o*.

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case; supposing the fact of a primitive creation, it follows that matter and Form must be concreated, though under difference of transcendental relation to each other.

PROPOSITION CLXXVIII.

Since the substantial Forms of bodies are exclusively acts of matter and have no independent subsistence of their own; they are not, absolutely speaking, beings in themselves, but are rather causes of being in another.

As the present Proposition is a sort of corollary from the last, it needs declaration rather than proof. Let us commence, therefore, with a summary of the teaching of the Angelic Doctor, collected from various of his writings.

In the first passage which is about to be set before the reader, St. Thomas is occupied in solving a problem that arises out of the question touching bodily substantial Forms, and the origin of which, as will be seen in the course of the solution, is attributable to the respective theories of Plato and Avicenna. The problem is this: *Whether the Forms of bodies are derived from Angels.* The solution is given by St. Thomas in the following quotation: 'It was the opinion of some, that all bodily Forms are derived from spiritual Substances whom we call Angels. This was maintained by some in one of two ways. For Plato maintained that the Forms which are in bodily matter are derived from Forms subsisting apart from matter by virtue of a certain participation. For he supposed a certain man subsisting immaterially, and a horse in like manner, and so on for the rest, by which the individuals subject to sensile perception are constituted; in that there remains in bodily matter a certain impression' derived 'from these separated Forms, by virtue of a sort of assimilation which he called participation. Moreover the Platonists maintained, that there was an order of separated,' (immaterial) 'substances, corresponding with the order of Forms; for instance, that there is one separated substance which is *Horse*, and that this latter is the cause of all horses. Above this, there is a sort of separated *Life* which they asserted to be absolute Life, and cause of all life; higher yet, a certain substance which they asserted to be

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archetypal Being and Cause of all being. Avicenna, on the other hand, together with some others maintain,—not that the Forms of bodily substance in matter subsist in and of themselves,—but that they subsist only in the intellect. Wherefore, they asserted that all the Forms which exist in bodily matter proceed from Forms in the intellect of spiritual creatures which they call Intelligences,—we, Angels; precisely as the Forms of productions of art proceed from the Forms that exist in the mind of the artificer. . . Now, all these opinions seem to have sprung from one root. For they sought for the cause of Forms, as though the Forms themselves were produced in themselves. But, as Aristotle proves in the seventh Book of his *Metaphysics,* that which is produced, strictly speaking, is the composite,'—that is, the integral bodily substance. 'The Forms, then, of corruptible beings can now exist, now cease to exist, without their being themselves generated or corrupted, by reason of the generation or corruption of the composites. For the Forms have no being even, but the composites have being by means of them; seeing that the production of a thing is in proportion to its being. Accordingly, since like is produced by its like, we ought not to seek for a cause of bodily Forms in any immaterial Form, but in some composite; just as this fire is generated by that fire. Wherefore, in like manner bodily Forms are caused, not as if by the causal influx of some immaterial Form, but by the reduction of matter from potentiality to act through the instrumentality of some composite agent. Forasmuch, however, as a composite agent, which is a body, is incited to movement by a created spiritual substance, as Augustine asserts; it further follows that even bodily Forms are derived from spiritual substances,—not as though they acted directly on the production of the Forms, but because they incite to the eduction of the Forms. But again, the intelligible Forms of the angelic intellect, which are certain seminal ideas of bodily Forms, are ultimately referred to God as to the first Cause[1].'

[1] 'Opinio fuit quorumdam, quod omnes formae corporales derivantur a substantiis spiritualibus, quas Angelos dicimus. Et hoc quidem dupliciter aliqui posuerunt. Plato enim posuit formas quae sunt in materia corporali, derivari a formis sine materia subsistentibus per modum participationis cujusdam. Ponebat enim hominem quemdam immaterialiter subsistentem, et similiter equum, et sic de aliis, ex quibus constituuntur haec singularia sensibilia, secundum quod in materia corporali remanet quaedam impressio ab illis formis separatis per modum assimilationis cujusdam, quam participationem vocabat. Et secundum ordinem formarum ponebant Platonici ordinem substantiarum separatarum; puta, quod una substantia separata est quae est equus, quae est

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Elsewhere the Angelic Doctor, in reference to the same problem represented from a somewhat different point of view, is still more plain. 'They' (viz. the Platonists and Avicenna), he writes, 'appear to have been led into this error' touching the causality of immaterial substances in the production of bodily substantial Forms, 'because they considered a Form to be something produced in itself; so that in this hypothesis it must proceed from some formal principiant. But, (as the Philosopher proves in the seventh Book of his *Metaphysics*), that which is, properly speaking, produced is the composite. For this latter, strictly speaking, exists; forasmuch as it is subsistent. Now, the Form is not called being as though it exists itself, but as that by which something exists. Hence it follows, therefore, as a consequence, that neither is the Form strictly speaking produced. For to be produced appertains to that which has a being of its own; since the being produced is no other than the road to being. Further: It is clear that the thing made bears a likeness to its maker; since every agent produces that which is like itself. Wherefore, that which produces the things of nature bears a likeness to the composite; either because it is itself a composite, (as fire generates fire), or because the entire composite, as regards both matter and Form, is virtually contained in the agent,

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causa omnium equorum, supra quam est quaedam vita separata, quam dicebant per se vitam et causam omnis vitae; et ulterius quamdam quam nominabant ipsum esse, et causam omnis esse. Avicenna vero et quidam alii non posuerunt formas rerum corporalium in materia per se subsistere, sed solum in intellectu. A formis ergo in intellectu creaturarum spiritualium existentibus, quas quidem ipsi intelligentias, nos autem Angelos dicimus, dicebant procedere omnes formas quae sunt in materia corporali, sicut a formis quae sunt in mente artificis, procedunt formae artificiatorum. . . . Omnes autem hae opiniones ex una radice processisse videntur. Quaerebant enim causam formarum, ac si ipsae formae fierent secundum seipsas. Sed sicut probat Aristoteles (in 7 Metaph.), id quod proprie fit, est compositum. Formae autem corruptibilium rerum habent ut aliquando sint, aliquando non sint, absque hoc quod ipsae generentur aut corrumpantur, sed compositis generatis aut corruptis; quia etiam formae non habent esse, sed composita habent esse per eas; sic enim alicui competit fieri, sicut et esse. Et ideo cum simile fiat a suo simili, non est quaerenda causa formarum corporalium aliqua forma immaterialis, sed aliquod compositum, secundum quod hic ignis generatur ab hoc igne. Sic igitur formae corporales causantur, non quasi influxae ab aliqua immateriali forma, sed quasi materia reducta de potentia in actum ab aliquo agente composito. Sed quia agens compositum, quod est corpus, movetur a substantia immateriali creata, ut Augustinus dicit (3 de Trin. cap. 4 et 5), sequitur ulterius quod etiam formae corporales a substantiis spiritualibus deriventur, non tanquam influentibus formas, sed tanquam moventibus ad formas. Ulterius autem reducuntur in Deum, sicut in primam causam, etiam species angelici intellectus, quae sunt quaedam seminales rationes corporalium formarum.' 1ª lxv, 4, *c.*

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which belongs to God alone. Thus, then, all information of matter is immediately due either to God or to some bodily agent, and not immediately to Angels[1].'

Once more: While discussing the question whether God works by creation in nature, St. Thomas again refers to the theories of Plato and Avicenna, including likewise that of Anaxagoras, and continues in the words that follow: 'These opinions seem to have had their origin in an ignorance as to the nature of Form; just as the earliest opinions' touching the constitution of bodily substances 'owed their origin to an ignorance as to the nature of matter. For being is not predicated univocally of a natural Form and of the generated entity. For being is absolutely and strictly predicated of the natural entity that has been generated, in that it has being and subsists in its own being. But being is not thus predicated of the Form, since this latter does not subsist or have being absolutely; but it is said to be, or is called a being, because by means of it something is. In a like manner accidents too are called beings, because by means of them substance is either of such quality or of such quantity,—not, however, because by means of them it absolutely exists, as in the instance of the substantial Form. Accordingly, accidents are more strictly said to be *of being* than *beings*, as is seen in the seventh Book of the *Metaphysics*. Now, everything that is made, is said to be made in the same sense as it is said to exist; for being is the term of production. Hence, that which strictly speaking is made in itself, is the composite; whereas the Form is not strictly speaking made, but is that by means of which something is made,—that is to say, by acquisition of which a thing is said to be made. The saying, then, that nothing is made out of nothing, does not hinder us from affirming that substantial Forms exist by means of an operation of nature. For that which is made is not the Form, but the composite which is made out of the matter and not out of

[1] 'Qui in hoc videntur fuisse decepti, quia existimaverunt formam quasi aliquid per se factum, ut sic ab aliquo formali principio procederet. Sed, sicut Philosophus probat in 7 Metaph., hoc quod proprie fit, est compositum. Hoc enim proprie est quasi subsistens. Forma autem non dicitur ens, quasi ipsa sit, sed sicut quo aliquid est. Et sic per consequens nec forma proprie fit; ejus enim est fieri, cujus est esse, cum fieri nihil aliud sit quam via in esse. Manifestum est autem, quod factum est simile facienti, quia omne agens agit sibi simile. Et ideo id quod facit res naturales, habet similitudinem cum composito; vel quia est compositum, sicut ignis generat ignem; vel quia totum compositum, et quantum ad materiam et quantum ad formam, est in virtute ipsius, quod est proprium Dei. Sic igitur omnis informatio materiae vel est a Deo immediate, vel ab aliquo agente corporali, non autem immediate ab Angelo.' 1^ae cx, 2, c.

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nothing. Further: It is made out of matter, forasmuch as matter is in potentiality to the composite itself, by virtue of its being in potentiality to the Form. For this reason it is not a right expression to say that the Form is made in the matter, but rather that it is educed from the potentiality of the matter. From this fact, that the composite is made and not the Form, the Philosopher points out in the seventh Book of his *Metaphysics* that Forms are the results of natural agency. For, since that which has been made must be like the maker of it; from the fact that what is made is a composite, the maker of it must likewise be a composite, and not a separated Form as Plato asserted. As, therefore, that which has been made is a composite, but that by means of which it has been made is the Form in the matter which has been reduced to act; so, in like manner, the generating entity is not a Form only, though the Form is that by means of which it generates,—a Form that is existing in this particular matter, for instance in this flesh, these bones, and the like[1].'

To conclude the teaching of St. Thomas on this point:—He tells us, that the metaphysical composition of being and subsistence (ex esse et quod est), though to be found in the human soul, 'is not discoverable in other Forms' of material substances, 'because they

[1] 'Istae opiniones videntur provenisse ex hoc quod ignorabatur natura formae, sicut et primae provenerunt ex hoc quod ignorabatur natura materiae. Forma enim naturalis non dicitur univoce esse cum re generata. Res enim naturalis generata dicitur esse per se et proprie, quasi habens esse, et in suo esse subsistens; forma autem non sic esse dicitur, cum non subsistat nec per se esse habeat; sed dicitur esse vel ens quia ea aliquid est; sicut et accidentia dicuntur entia, quia substantia eis est vel qualis vel quanta, non quo eis sit simpliciter sicut per formam substantialem. Unde accidentia magis proprie dicuntur entis quam entia, ut patet in Metaphysic, lib. 7. Unumquodque autem factum hoc modo dicitur fieri quo dicitur esse. Nam esse est terminus factionis; unde illud quod proprie fit per se, compositum est. Forma autem non proprie fit, sed est id quo fit, id est per cujus acquisitionem aliquid dicitur fieri. Nihil ergo obstat per hoc quod dicitur quod per naturam ex nihilo nihil fit, quin formas substantiales ex operatione naturae esse dicamus. Nam id quod fit non est forma, sed compositum; quod ex materia fit, et non ex nihilo. Et fit quidem ex materia, inquantum materia est in potentia ad ipsum compositum, per hoc quod est in potentia ad formam. Et sic non proprie dicitur quod forma fiat in materia, sed magis quod de materiae potentia educatur. Ex hoc autem ipso quod compositum fit et non forma, ostendit Philosophus in 7 Metaph., quod formae sunt ex agentibus naturalibus. Nam cum factum oporteat esse simile facienti, ex quo id quod factum est est compositum, oportet id quod est faciens esse compositum, et non forma per se existens, ut Plato dicebat; ut sic, sicut factum est compositum, quo autem fit est forma in materia in actum reducta; ita generans sit compositum, non forma tantum; sed forma sit quo generat,—forma, inquam, in hac materia existens, sicut in his carnibus et in his ossibus et in aliis hujusmodi.' *Pot.* *Q.* iii, *a.* 8, *c.*

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cannot subsist, as it were, in their own being, but exist by virtue of the being of the composite[1].' So again: 'In the human soul there is discoverable a composition of being and subsistence, but not in other Forms' of material substance; 'because being does not belong absolutely to bodily Forms as it does in the case of things that subsist, but to the composite[2].' Hence, 'Forms are not arranged under genus and species, but the composites[3];' for the reason that 'Primordial matter and material Forms are not in the category of substance as species, but only as principiants[4].'

It now remains to collect and develope in orderly sequence the doctrine contained in the above quotations. It is to be observed at the outset, that all the statements of the Angelic Doctor are strict deductions from the one fundamental principle,—viz. that the substantial Form in bodies is simply and exclusively the act of primordial matter. It may be here useful to repeat that which has been stated already touching the precise meaning of the terms, *act* and *Form*; with special reference, however, to the present Proposition. Act, then, is the correlative of potentiality; for an act is the term of an actuated potentiality. See the introduction to this Chapter, and the *hundred and seventy-fifth* Proposition. It may be convenient to the reader to recall a favourite example. There is a passive potentiality in water to receive (let us say, for the sake of precision) 212° F. of heat. By application of fire the water attains that heat, and is at boiling-point. Its previous mere capacity, or receptivity, is now made actual; and the said degree of heat becomes an accidental act of the water. The water is no longer *capable* only of receiving this degree of heat; for it has actually received it. Furthermore: It is plain that the acquisition of such an act is, strictly speaking, a perfection; because the Subject (in the above instance, the water) receives a something real which it did not previously possess. But all real entity is good, and goodness is perfection;

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[1] 'Qui tamen compositionis modus in aliis formis non invenitur, quia non possunt esse sub istentes quasi in esse suo, sed sunt per esse compositi.' 2 *d.* xvii, *Q.* 1, *a.* 2, *c.*

[2] 'Unde in anima invenitur compositio esse et quod est, et non in aliis formis; quia ipsum esse non est formarum corporalium absolute, sicut eorum quae sunt, sed compositi.' 1 *d.* viii, *Q.* 5, *a.* 2, 1^{m}.

[3] 'Formae non collocantur in genere vel specie, sed composita.' 1^{ae} lxxvi, 3, 2^{m}.

[4] 'Vel quia res illa non habet esse absolutum, ut ens per se dici possit; et propter hoc materia prima et formae materiales non sunt in genere substantiae sicut species, sed solum sicut principia.' 2 *d.* iii, *Q.* 1, *a.* 6, *c.*, *init.*

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therefore, added entity is added perfection. Similarly: Form is the correlative of the informed, or Subject. Here, too, the Subject of information, prior to its actuation by the Form, is in pure passive potentiality to the Form,—in other words, it is capable of receiving the said Form, but is utterly unable of itself to energize towards its eduction, presenting itself as a mere field of action for the operation of some efficient cause. By reception of the Form such potentiality, or receptivity, is actuated and determined. Hence it is obvious that Form and act are in such instances objectively the same; yet they do not represent the same objective concept. For act formally connotes existence; Form, differentiation. By act we rather conceive of a thing as determined to be, whether substantially or accidentally; by Form, as determined to be such or such specifically. Accordingly, act (to discriminate with utmost precision) is more strictly applicable to substantial Forms; while Form designates accidents more accurately than act. Nevertheless, as existence in finite being essentially connotes differentiation, the substantial act is really and truly the substantial Form; and, since an accidental differentiation essentially connotes a reality newly existing in the Subject (substance), the accidental Form is really and truly an accidental act. But there is this fundamental distinction between substantial and accidental Forms;—the Subject of the substantial Form only exists, or can exist, by the actuation, and that actuation it receives from the Form; while the Subject of an accidental Form is already fully constituted in its substantial being. The former can have no existence apart from its Form; the latter is essentially presupposed, at least according to priority of nature, since all accident presupposes substance.

Let us now limit our inquiry to the substantial act, or Form. Primordial matter, as we have seen in the preceding Chapter, is a purely passive potentiality,—a simply undetermined and in itself indeterminate receptivity. Hence, it is only half-being,—lowest in the scale of real things,—absolutely incognizable, save under the actuation of some Form. On the other hand, the substantial Form in its entirety is simply and exclusively the act of matter. It has no existence which is not originally derived from, and ever dependent on and limited by, that portion of matter which is its Subject. It is as indivisible from the matter, as a thought is entitatively inseparable from the active potentiality, or faculty, of thought; for it is the act of matter, nothing more and nothing less. Just, then, as

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in art the accidental human Form is the marble in act, so that its existence apart from the stone is inconceivable, and as the intention of the artist,—the efficient cause,—is to produce the statue by means of the Form, and not the Form in and by itself, (which is an impossibility); so, after a like manner, the substantial Form is the act of primordial matter, and may roughly be said to be matter in act, in such wise that it cannot, (at least naturally), exist apart from the matter, and the intention of nature in generation is to produce the composite substance by means of the Form, and not the Form in and by itself, (which is in like manner an impossibility.)

And now to pursue more directly the doctrine of St. Thomas touching the entity of bodily Forms:—No substantial bodily Form (with the solitary exception made at the commencement of this Article) has a *quod*, or subsistence of its own, as spiritual Forms have. Neither has it a *quo*, or specific nature of its own, as the latter have. For it has no separate existence of its own, since its existence is exclusively in the composite; neither has it of itself a specific nature, because it is purely the Form, or act, of something else, although it constitutes the specific nature of the composite. To this it may be possibly objected, that nothing can give that which is not its own to give. But this axiom, however true when understood of complete entities, does not hold good in the instance of such entities as are essentially incomplete and partial. Accordingly it is more strictly correct to use the expression adopted above and say that it *constitutes* the specific nature of the composite, in place of saying that it *gives* to the composite its specific nature; because the Form intrinsically determines the essence as principal constituent of the integral substance. It can only be said to give in a loose and analogical sense, inasmuch as it may be conceived as giving itself to the matter for the constitution of the composite. Hence, bodily Forms cannot be classified under any genus or species, though they essentially conduce towards the classification of their composites; nor can they claim any position in the Category of Substance, save by reduction. They are only half-beings; and the Categories only embrace integral entities. They belong to no species, because they have no essential nature of their own. They belong to no genus, because they have no material part. For the same reason, as we have seen in the preceding Proposition, they cannot be terms of a Creative Act or of natural production by themselves.

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COROLLARY.

Though these substantial bodily Forms are not integral beings, essences; yet in the composite they have a partial entity and a partial nature of their own, which principally determines the specific nature, or essence, of the composite, and is representative of the Exemplar Idea in the Divine Wisdom.

PROPOSITION CLXXIX.

A substantial bodily Form exists for the first time in the instant of generation; but this newness of existence is absolutely and adequately predicated of the integral composite, only relatively and inadequately of the Form.

It cannot be doubted that in a certain true sense there occurs the existence of a new Form in the instant of generation; for this is nothing more or less than what is meant by generation. Generation is in fact a substantial transformation, in other words, a change of Form; though denoting also the action of some efficient cause. Now, as in every change there are two elements, viz. the two terms, on the one hand, and something that perseveres throughout the change in intimate conjunction with both terms, on the other; there is accordingly in all generation the matter that perseveres throughout the change, and the two Forms,—the receding Form, and the newly introduced Form which takes the place of the former,—as the two terms of change. Hence, newness of existence is truly predicated of the evolved Form. How, then, can the conclusions of the preceding Thesis hold their ground in face of these facts? That which has no integral being and no existence in itself, cannot surely be said to have newness of existence. Such is the difficulty, to which the present Proposition professes to afford an answer.

We have seen that substantial bodily Forms have a partial being, just as accidents have a partial being. Consequently, newness of existence may be truly predicated of them. Before, they were not; now, they are. Moreover, it is true that the substantial change consists in an exchange of Forms,—in the expulsion (as it has been termed) of the old Form and the evolution of the new Form. Thus,—to take an instance,—the very same matter that existed in the *pupa*, or *chrysalis*, now exists in the *moth* or *butterfly*; but the substantial Form of the chrysalis has passed away somewhere or some-

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how, and has made way for that of the moth, which has accordingly commenced to exist. It is impossible, then, to deny that, in some way or other, the substantial Form which constitutes the generated substance has newness of existence. But how? Not in itself surely. Who could ever conceive the substantial Form of the butterfly, except as informing, vivifying, the matter,—the body, wings, etc.—of the insect? It is not the Form that is generated, but the butterfly; and the adequate generative change is not from Form to Form, but from chrysalis to butterfly. The respective Forms, or acts, constitute the two *formal* terms; but the *adequate* terms are the two integral composites,—the corrupted and generated substances. As things are made, so they exist; which is only saying with the Angelic Doctor, that as things exist, so are they made. If, then, the substantial Forms are not made save in their relation to the composite, and if they are not the adequate, but only formal, terms of the generative change; it stands to reason that they can only be said to exist, or to have newness of existence inadequately and in necessary relation to the new composite,—the adequate term of the generative change. Hence, St. Thomas observes, that 'though the human soul cannot be brought into being save by creation,' 'it is not true of other' material 'Forms. The reason of this is,' he continues, 'that, since to be made is the road to being; the manner after which an entity is made comports with the nature of its being. Now, that is properly said to exist, which has true being, as subsisting in its own being. Wherefore, substances alone are properly and truly called beings. Accident, on the other hand, has not being, but by means of it something is; and for this reason it is called being, because by it something is denominated white. . . . The same holds good of all other non-subsisting Forms. Consequently, it does not properly belong to any non-subsisting Form to be made; but these are said to be made,'—and therefore, to exist,—'because the subsisting composites are made[1],'—and exist. If, then, existence cannot be adequately or

[1] 'Anima rationalis non potest fieri nisi per creationem; quod non est verum de aliis formis. Cujus ratio est, quia cum fieri sit via ad esse, hoc modo alicui competit fieri, sicut ei competit esse. Illud autem proprie dicitur esse, quod habet ipsum esse, quasi in suo esse subsistens. Unde solae substantiae proprie et vere dicuntur entia; accidens vero non habet esse, sed eo aliquid est, et hac ratione ens dicitur, sicut albedo dicitur ens, quia ea aliquid est album. . . . Et eadem ratio est de omnibus aliis formis non subsistentibus; et ideo nulli formae non subsistenti proprie convenit fieri, sed dicuntur fieri per hoc quod composita subsistentia fiunt.' 1ae xc, 2, *c.*

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absolutely predicated of these substantial Forms, because they are incapable of subsisting in themselves and essentially require a Subject of which they are the act; it is obvious that, for the same reason, newness of existence can be absolutely and adequately predicated only of the composite, not of the Form.

It may, perhaps, be made subject of complaint, not without some show of justice, that, though the three preceding Propositions may throw considerable light on the nature of substantial Forms, they do not satisfactorily explain the precise meaning of the declaration that these Forms are educed, or evolved, out of the potentiality of matter. The complaint is to some extent true; though it will be found in the sequel that these three Theses lead up to the promised explanation, and will serve to render it more easily intelligible. The explanation itself will be given in the Propositions that follow.

PROPOSITION CLXXX.

The educibility of the substantial bodily Form from the potentiality of matter consists, on the part of the material cause, in a priority of nature relatively to, a natural aptitude for, and a virtual, or potential, inclusion of, such Form in the matter itself.

The present Proposition, as may easily be seen, consists of four Members which shall be treated separately. It will be declared, then, first of all, how that matter claims a sort of priority of nature over the substantial Form; secondly, that it has a natural aptitude for such Form; thirdly, that it virtually precontains the Form; and, fourthly, how these properties explain the educibility of the Form from the potentiality of matter.

I. The first Member of the Thesis, in which it is asserted that *matter exhibits a priority of nature relatively to the substantial Form*, is thus declared. The reader is reminded that priority of nature does not necessarily include priority in order of time, and that it consists in this, viz. that the entity which is said to be prior is independent in its nature of the other term which is posterior, while this latter is essentially dependent on the former. Now, it would seem at first sight as though it were impossible that there should be any such priority of matter over the Form. For both matter and Form are entities so imperfect in themselves, that they are necessary each to the existence of the other;—that is to say,

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they neither of them have a subsistence of their own, and exist only in the composite. Moreover, there is a mutual causality inherent in both terms: so that each is really and truly a cause to the other, though after a different manner. Hence, there must obviously be mutual dependence. But, if matter is dependent on Form as a cause, how can it pretend to a priority of nature over the Form? Again: The Form has a certain excellence and essential superiority over the matter in the composite; since it determines the specific nature of the latter. For this reason, matter is incapable of becoming an object of the intellect save in its relation to, or conjunction with, the Form. But, if so, it cannot be prior in order of nature to the Form; since such priority connotes a certain entitative superiority over the other term.

Of course, in entities that are only half-beings and have no subsistence save in another, we should look in vain for the same accurately defined priority of nature which is discoverable in the instance of integral and subsisting entities; nevertheless, from one point of view matter claims a certain priority of nature over the Form, just as from another point of view the Form claims a certain priority of nature over the matter. The Form is prior to the matter in the constitution of the essence; while matter is prior to the Form in order of genesis. Now, the genetic order is precisely the one which presents itself to our notice in the present Article. Since, then, matter is the Subject of the Form, it must be genetically prior to it; and because it is genetically prior to it, matter is truly the principiant of the Form in a sense in which it is impossible that the Form should be principiant of matter, —that is to say, in the genetic order. How this is, it now remains to explain. Every act in contingent being presupposes its potentiality; accordingly, a bodily substantial Form presupposes matter. But this presupposition connotes a priority which is not necessarily a priority of time and could not possibly be such in the primordial constitution of the elements, or simple substances. It is most certainly not a mere priority of order, since its basis is causal. Therefore, it must be a certain priority of nature. Act and potentiality stand in the relation to each other of Form and Subject; and the Subject is prerequired, in order that the Form may be able to inform and actuate. Hence, in order of genesis or production, the partial entity of the Form presupposes and prerequires the matter; while the partial entity of the

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matter neither presupposes nor prerequires the Form. The matter has an independence, so to say, of its own as first Subject; but the Form essentially depends upon the matter as being its act. So, then, albeit Form and matter are incomplete entities, are mutually dependent, and cannot exist the one without the other; yet, considered by themselves in their own imperfect entities, the Form in order of genesis necessarily presupposes the matter, while the matter does not presuppose the Form. The point may be made more clear, if we assume the analogous case of an accidental Form by way of illustration. Let us suppose a shake of the hand with a friend. The muscular and motive power in arm and hand is the potentiality; the grip is the act. Obviously enough, the power in arm and hand does not essentially require or presuppose the grip; for, as a fact, it existed long before this particular shaking of the hand, and will continue to exist after the act is over and done with. But who could even imagine the friendly grasp without the muscular and motive power of arm and hand? The above is an instance taken from an active potentiality. Let us now assume another from a passive potentiality, where the analogy is more complete. Take the case of a heated bar of iron. This piece of metal has a natural capacity and aptitude for receiving heat. Such is the potentiality. This potentiality is reduced to act by the operation of fire. The imparted heat is the accidental Form. It is plain that the heat does not enter into the nature of the iron, nor does the iron in its entity or passive potentiality presuppose the heat. On the other hand, nobody could conceive of the heat really existing independently of the said capacity in the Subject. Heat without a Subject heated is not conceivable as a concrete reality. In the use of these illustrations, however, care must be taken not to push the analogy too far; since accidental in many important respects differ from substantial Forms, and an active potentiality is very different from a passive. With this caution, the above instances will doubtless subserve the purpose for which they have been introduced,—viz. to illustrate the priority of nature which the Subject postulates in order of genesis.

The first two objections against this member of the Proposition, which were given at the beginning of the declaration, are sufficiently answered by the above explanation. It may be as well to offer a few animadversions on the last. It is undeniably true, as the objection sets forth, that the substantial Form does exhibit

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an excellence and superiority over matter in the composite; but it is an excellence and superiority of entity, not in regard of independence in order of genesis. The above answer receives illustration from the transcendental relation of an accidental Form to its Subject. There is no doubt that the former adds to the latter a perfection which the latter did not possess before; and so far the Form has an advantage over its Subject, because it adds to the substance a new entity and actuates a mere capacity of the Subject. Thus, for instance, a red rose has this advantage over a rose conceived in its own purely substantial nature without colour,—that *it is red.* Yet all the same, the rose in order of nature must first *be,* before it can be red. The latter presupposes the former. The rose need not be red, to be a rose; but if the rose is red, the rose must be. Consequently, the Subject of the accidental Form has a priority of nature over the accidental Form, notwithstanding that the latter adds to the perfection of its Subject. It is indeed true, that in this and parallel instances the Subject has an essential superiority over the Form, seeing that the latter is in one of the accident-Categories, while the former is in the Category of Substance; whereas matter and the substantial Form equally belong by reduction to the same Category of Substance, and are so far on a par. This, however, does not weaken the force of the analogy; for the general nature of the dependence is the same in both, so far as regards the priority here claimed.

II. In the second Member of the Proposition it is affirmed, that *matter has a natural aptitude for the substantial Form.* Such natural aptitude of matter for the Form is of two kinds,—viz. general and special. It will contribute towards a clear and adequate concept of this portion of the Proposition to consider these two aptitudes separately.

i. There exists in primordial matter a *general* aptitude for receiving some substantial Form. Such aptitude is essential to matter; for potentiality and act,—as there has been occasion to repeat so often before,—are correlatives. Act is the natural perfection of every potentiality; and everything has an essential aptitude for its own natural perfection. This receives strong confirmation from the fact, that matter cannot possibly exist without some Form. But everything has a native tendency to exist; and such tendency, *as being natural,* connotes an aptitude. If, however, it has an aptitude for existence, it must have an aptitude for Form; seeing

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that its actuation by a Form is its only road to existence. Lastly: A fresh confirmation of the argument is derived from the final cause of primordial matter. For the partial entity of matter is for the sake of the composite. But the existence of the composite essentially depends on the actuation of matter by some Form. Hence, if matter had no natural aptitude for Form, its final cause would be frustrated and itself rendered useless. Such general aptitude, however, attaching to matter as a pure potentiality, does not adequately account for the educibility of Forms so distinct, various, and differing in grade of perfection; neither can it alone explain how one Form rather than another should be *hic et nunc* evolved,—that is to say, *adequately* and *alone*, so far as matter by itself can afford an explanation. The reason is, that such aptitude is undiscriminating; so that, in virtue of it exclusively, matter is wholly indifferent as to the particular Form by which it may be actuated. All that it thus postulates in its own nature is information *as such*, because necessary to its being.

ii. There is, then, besides the general aptitude, a special aptitude of matter for the reception of such or such a Form in particular; for, as the Angelic Doctor remarks, 'That which is perfectible is not united to a Form, till after there is in it a disposition which renders the perfectible receptive of such Form; forasmuch as a proper,' or special, 'act is effected in its own proper,' or special, 'potentiality. Thus, for instance, a body is not united to the human soul as its Form, till after it has been organized and disposed[1].' This disposition, which causes in matter its special aptitude for a particular Form, is of a threefold character; as will be explained in the following quotation from St. Thomas. 'The preparation,' writes the Angelic Doctor, 'which is required in matter in order to its receiving the Form, includes two things,—viz. that it should be in due proportion to the Form as well as to the agent whose it is to introduce the Form; for nothing evolves itself out of potentiality into act. Now, due proportion for receiving the act of the agent is discoverable in a due approximation to the agent. . . . But the due proportion of matter to the Form results in two ways, viz. by the natural ordering of matter for the Form, and by re-

[1] 'Perfectibile autem non unitur formae, nisi postquam est in ipso dispositio, quae facit perfectibile receptivum talis formae; quia proprius actus fit in propria potentia; sicut corpus non unitur animae ut formae, nisi postquam fuerit organizatum et dispositum.' *Verit. Q.* viii, *a.* 3, *c.*, *init.*

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moval of impediment[1].' We may omit for the present the consideration of the proportionment of matter to the efficient cause of generation; forasmuch as this point of the question will claim our attention in a more appropriate place. The preparation of matter, by which it acquires a special aptitude for a special Form, consists of two elements, as we are told;—first of the ordering of matter in the direction of the Form; then, secondly, of the removal of whatsoever impediment that opposes itself to the acquisition of the Form. We will consider these two kinds of preparation separately.

a. Matter, then, is prepared for the evolution of a particular Form by being ordered or disposed in the direction of such Form, by virtue of which it receives beforehand a natural inclination towards it. It is of no consequence for the present by what agency such arrangement in the matter is effected; let it suffice that it is there. The fact of its existence is attested by universal physical experience. It must not escape our memory, that in natural generation matter is never for a moment really uninformed; for, throughout the generative change, it is either under the Form of the corrupted, or under the Form of the generated, substance. Indeed, as has been seen, it could not possibly be otherwise; since matter cannot stand alone. This adds somewhat to the difficulty of the inquiry; but does not hinder us from considering the matter, while under information of the original Form, in its preparation for the new Form. During that time certain alterations take place in the matter. Alterations, as we know, are accidental changes. They have a twofold effect. They indispose the matter for its continued actuation by the old Form, establishing a growing incongruity between the two; while they dispose the matter, on the other hand, more and more for its actuation by the new Form, effecting a gradual congruity between the two. At last the matter becomes wholly unfitted for the retention of the old Form and in proximate preparation for the reception of the new one; whereupon the latter is evolved and the new substance generated. Thus, for instance, in a dying animal certain alterations go on in the organism, which

[1] 'Praeparatio quae exigitur in materia ad hoc quod formam suscipiat, duo includit; scilicet quod sit in debita proportione ad formam et ad agens quod debet formam inducere; quia nihil se educit de potentia in actum. Debita autem proportio ad suscipiendum actum agentis attenditur secundum debitam approximationen ad agens... Sed debita proportio materiae ad formam est dupliciter; scilicet per ordinem naturalem materiae ad formam, et per remotionem impedimenti.' *4 d.* xvii, *Q.* 1, *a.* 2, *q.* 2, *c.*

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render the body less and less fitted for the retention of the living Form; till at last the matter is reduced to a condition incompatible with life, and the corpse-Form is evolved. Similarly, accidental changes take place in the material substance of the *pupa*, which render it incompatible with a longer retention of the *chrysalis*-Form, and proximately, dispose it for receiving that of the *butterfly*; whereupon, the former disappears and the latter takes its place. After a like manner, the matter in *water*, when heated above boiling-point, becomes unfitted for the Form of water and in proximate disposition for receiving that of *steam*; accordingly, the transformation takes place. (That water and steam are essentially distinct, at least from a metaphysical point of view, is plain from their distinct,—nay, opposite,—properties and powers). The same process of alteration is yet more conspicuous in the generation of plants and animals. When the Forms are low in the scale of types, there is need of little complexity in the preparation of the matter, as may be easily seen in the constitution of inanimate substances; but, in proportion as the Form is nobler, so is the required preparation of the matter more complex, as we see in the instance of plants and animals. The higher the animal in the order of being, the more complex is its organism.

b. Matter is likewise prepared for the evolution of the new Form by the removal of every whatsoever impediment that may stand in the way of such an evolution. It is plain that the persistence of the old Form is the most serious impediment to the generation of the new substance; since, as we shall see later on, it is impossible that two substantial Forms should simultaneously inform one and the same portion of matter. Now, the qualitative alterations in the matter, while disposing the latter for the evolution of the new Form, proportionally, (as has been shown), indispose it for the retention of the old Form. This they do directly and indirectly;—directly, inasmuch as they object incongruous dispositions of the matter; indirectly, because they are antagonistic to the properties congenital with the finally corrupted substance. In this latter way secondary impediments are removed. For the properties of the original Form would, for so long as they remained, obstruct the evolution of the new Form; since a substantial Form energizes through the instrumentality of its accidents. It would be difficult for a *butterfly* to hover about in the air with the sheath of the *chrysalis*.

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III. In the third Member of the Proposition it is asserted, that *there is in matter a potential inclusion of the Form.* In order to be able to render the declaration of this part of the Thesis intelligible, it will be necessary briefly to forestall certain points in the teaching of the Angelic Doctor, which will be elaborated elsewhere. In the primordial genesis of material things, God created certain elements, or simple bodies, from which the whole material order has been gradually evolved. Within the limits and circuit of these elements,—as forming one of their essential constituents, common to them all,—primordial matter was concreated; and received from the Forms of those elements its entitative limit, so that there never has been and never will be matter other than that which from the first existed under the Forms of the original simple bodies, whatsoever and how many soever they may have been. As it was thus primordially limited in the extent, so to say, of its entity, it was likewise limited in its receptivity. Though actually determined under certain lowest, simplest, and basal Forms, it was at the same time rendered capable of receiving all such Forms as should correspond with those exemplar Ideas in the mind of the Creator, that He had selected for the full development of His material creation,—or rather, capable of evolving them under the guidance of those physical laws of corruption and generation which He had imposed. Thus, this array of Forms virtually pre-existed in the potentiality of the matter. Subsequently to the creation of these simple bodies or of (it may be) these allotropic forms of one single element, there were lodged or planted in matter, thus actuated, certain powers active as well as passive, by virtue of which the series of higher and more complex substances might be gradually evolved by natural operation. For this reason the said powers are called by St. Thomas seminal Forms; since by means of them the varied Forms of mixed bodies up to the highest orders of animals could be evolved out of matter under the prescribed conditions. Instances of these seminal Forms are, chemical affinities, electricity, heat, etc. Thus matter became the womb of the visible Cosmos.

IV. The fourth Member of the Proposition declares, that *these characteristics of primordial matter explain, so far as the matter of itself can explain, the educibility of the Form from the potentiality of the matter;* which is thus declared.

i. If the matter is Subject of the substantial Form and, because

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Subject, is naturally prior to the Form; we begin to see a reason why the Form should be said to be educed out of the potentiality of the matter. Thus: There are only two ways in which an entity can begin to exist,—either by creation or by production. If its existence is the result of creation, it is made out of nothing; if its existence is the result of mere production, it is made out of something. Now, a newly generated substance in the natural order is not created, but produced. Therefore, it is made out of something. The question, then, is; Out of what is it produced? It is constituted of matter and Form. Can it possibly be produced out of the Form? Impossible; because *physical* production, (and such is the case before us), postulates that the Subject should be prior in order of time to the generated entity. But the commencement of the substantial Form is synchronous with that of the composite substance. Wherefore, if it must be one of the two, it will be the matter from which the newly generated substance will be produced. Yet, it must be one of the two; for that out of which a thing is made must enter into its intrinsic composition, and these two elements are the only intrinsic constituents of material substance. Consequently, it is matter *out of* which the composite is made; though it is the Form *by* which the same composite is essentially constituted. But all this does not determine the mode in which the substantial Form receives its existence; for, speaking metaphysically, the Form must exist before the composite in priority of nature, because constituents are naturally prior to the constituted, —components to the composite. Therefore, the Form might have been created, even though the integral substance should be produced. This, indeed, is what takes place in the instance of each individual man; the soul is created, the man produced. May not such, then, be the case with the other substantial Forms of material substance? Impossible; because these latter have no subsistence in themselves. They are simply acts of matter; and are rather causes of existence to something else,—that is to say, to the composite substance,—than existences themselves. For the same reason, they cannot be produced; for both creation and production are terminated to subsisting being. But, if they are neither created nor produced, in what way can they acquire their partial existence? Now let us introduce the doctrine touching the potentiality of matter. Matter is a pure passive potentiality,—that is to say, a pure receptivity,—awaiting its act in order to exist. It is,

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accordingly, the Subject of the Form and, as such, prior in order of nature to the Form. So much has been evinced in the preparatory Theses. The act, therefore, by which the matter is actuated, is its own. This it is which is expressed by the phrase that the Form is educed out of the potentiality of matter; though it by no means exhausts the signification, even on the part of the matter. It is this, too, which St. Thomas conveys where he observes that, 'Since the sensile soul' of animals 'is not a subsisting entity, it is not a quiddity,—just as other material Forms are not,—but it is part of a quiddity; and its being is in its union with matter. Hence, the production of a sensile soul is nothing else but the change of matter from potentiality to act[1].' But 'the evolution of an act from the potentiality of matter is nothing else than that something is made actual, which was previously in potentiality[2].'

ii. The above explanation becomes a degree clearer, if we add that matter has a natural aptitude and inclination for a Form intrinsically perfective of its own entity. For what after all does this mean? It means that the matter has a natural appetite, so to say, for its own actuation. Now, the actuation of a potentiality is not something added to the latter from without, but is an evolution of itself. Such is the case with an active potentiality; and in this respect the parallel is complete. A thought that actuates the intellectual faculty is that faculty in act; and when a dog scents out its prey, the act is simply the sensitive faculty of smell in energy. This inclination of matter towards its Form becomes more apparent and helps more pronouncedly to a right understanding of the phrase now under consideration, when determined in the direction of a particular Form by previous alterations, or accidental modifications; for in such cases the Form may almost be said to lie sleeping in the matter, ready at once to be evoked.

iii. This explanation receives its completion, if we add that, by virtue of a Divine seal originally impressed on matter, the substantial Form is potentially precontained in the matter. If it be

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[1] 'Anima sensibilis, cum non sit res subsistens, non est quidditas, sicut nec aliae formae materiales, sed est pars quidditatis, et esse suum est in concretione ad materiam; unde nihil aliud est animam sensibilem produci, quam materiam de potentia in actum transmutari.' *Po*ª *Q.* iii, *a.* 11, 11ᵐ.

[2] 'Actum extrahi de potentia materiae nihil aliud est quam aliquid fieri in actu quod prius erat in potentia.' 1ª⁰ xc, 2, 2ᵐ.

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virtually there already, it is easy to understand how it must proceed from matter, or be educed therefrom,—from the potentiality of matter, because matter only contains it potentially.

PROPOSITION CLXXXI.

The educibility of the substantial material Form from the potentiality of matter designates, on the part of the Form, an essential dependence upon the matter for its so-called production as well as for its partial subsistence.

This Proposition contains three Members.

I. THE FIRST MEMBER asserts that *the substantial Form essentially depends upon the matter for its so-called production.* The phrase, *so-called*, has been introduced into the Enunciation, because accurately speaking it is not the Form that is produced, (as has been noticed more than once already), but the composite substance by virtue of the Form. The Form, then, depends upon the matter for its production, primarily because it is not strictly an entity in itself, and consequently cannot be produced or created. Without the matter, therefore, it is metaphysically impossible that it should be produced or exist; because a half-entity by essence, (and such is the material Form), cannot be brought into existence save in conjunction with the other half-entity which conspires with it to constitute the essential whole. The Form and matter are reducible under the same Category, for they are both substantial; consequently, together they constitute one integral essence. It is thus mainly that a substantial is distinguished from an accidental Form. The latter, while equally denoting a natural dependence on its Subject, is a complete entity in its own Category, having its own essence; while its Subject is essentially complete and belongs to another Category. Hence, though naturally, yet it is not metaphysically, impossible that it should exist without a Subject. But a substantial material Form is not complete in the Category under which it is reduced, and has no essence in its own right; though by it the essence of the composite is determined. Moreover, its Subject is attached by reduction to the same Category, and is itself incomplete and incapable of independent existence. Secondly, it is concluded that a substantial material Form is essentially dependent upon matter for its so-called production, because it is not subsistent of itself. For, (to make use of an argument that has served before), there are only four ways

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by which a being can begin to be,—by creation, by production, by concreation, by eduction out of something else. Now, that which begins to be either by creation or production must be subsistent in its own right. But this the Form in question is not. Therefore, it must have begun to exist by eduction from something else; for, even if concreated with the matter, it is concreated in essential dependence on the matter. But if it is evolved out of something else, as necessary to its being; it follows that it essentially depends upon that something else for its production, just as the Form of the statue depends for its realization upon the material which the sculptor has selected. This something else is primordial matter. Lastly, it is concluded that a substantial material Form is essentially dependent on matter for its so-called production, because it is simply and exclusively the act of matter. For it follows thence, that the said Form is essentially the complement and perfection of the matter, and is so far identified with it. It is the reduction of a real physical potentiality to act and, as such, derives its being from such potentiality.

II. The Second Member of the Proposition declares that *the substantial material Form essentially depends upon matter for its partial subsistence.* Not only is matter necessary to the first so-called production of the Form; but it is equally necessary to its perseverance in being. The same essential dependence perseveres so long as the substantial composite perseveres; and for the same reasons. The Form continues to exist only in the composite; and the composite includes the matter as actuated by the Form.

III. In the Third Member it is asserted that *this essential dependence of the substantial material Form on the matter both for its beginning and its continued existence explains, on the part of the Form, the meaning of the phrase, that the said Form is educed out of the potentiality of the matter.* This proposition is so plain as to require no further declaration; if the doctrine enunciated under the two preceding Members be once admitted. For, as regards its beginning to be, the first Member evinces that it must be the result of eduction out of matter; while the second Member teaches, that such dependence on matter forms an essential part of its continued existence.

From the present and preceding Theses it is concluded, that by the educibility of the Form out of the potentiality of matter is meant (i) *negatively*, that it cannot possibly be created or made: (ii) *positively*, that, as a half-entity,—as Form, or act, of matter

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which is itself a half-entity attached by reduction to the same Category,—it can only begin or continue to be, in conjunction with matter: Furthermore, that, since matter as Subject has a natural priority over Form in the genesis of the composite, the Form has an essential dependence on the matter for its beginning and continuance; so that it is evolved out of the matter which potentially contains it.

Corollary I.

Since neither matter nor its substantial Forms can be created by themselves; in the instance of the primordial elements they were concreated in the composite substance, so that this latter was the direct term of creation. The elements, therefore, or chemically simple bodies, were first created of all material things.

Corollary II.

Matter, when concreated in the primordial elements, received (as has been explained) a potentiality to each and every Form that was ever to be realized in nature. Hence St. Thomas declares that 'a Form may be considered in two ways; first, as it is in potentiality, and in this way it is concreated by God with matter, without the intervening action of nature as disposing' the matter for it. 'Secondly, as it is in act; and in this way it is not created, but is educed from the potentiality of matter by natural agency[1].'

Corollary III.

'Matter, then,' remarks St. Thomas, 'considered as it is in itself, must necessarily be regarded as in potentiality to the Forms of all those entities of which it is the common matter. Now, by any one Form it is not made actual save as regards that particular Form. Wherefore, it remains in potentiality with respect to all the other Forms. Neither does this cease to be the case, if one of these Forms is more perfect and virtually contains the others in itself; because the potentiality, so far as itself is concerned, is equally indifferent to the perfect or the imperfect. Hence, just as under

[1] 'Forma potest considerari dupliciter; uno modo secundum quod est in potentia; et sic a Deo materia concreatur, nulla disponentis naturae actione interveniente. Alio modo secundum quod est in actu; et sic non creatur, sed de potentia materiae educitur per agens naturale.' *Po*^{a} *Q.* iii, *a.* 4; 7^{m}.

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an imperfect Form it is in potentiality to a perfect Form; so is it conversely[1],'—that is to say, under a perfect Form, even though it virtually contain the imperfect, the matter is nevertheless in potentiality to the imperfect Form. This fully explains the possibility and reason of *retrograde* generation,—in other words, of the change from a superior to an inferior substance. Accordingly, the same Doctor tells us in another place: 'Although Forms' (substantial) 'and accidents do not possess matter as a part of themselves, of which they consist;'—that is to say, though they include no material cause in their entity;—'nevertheless, they have matter in which they exist and act, and out of whose potentiality they are educed. Hence, even when they cease to exist, they are not entirely annihilated but remain in the potentiality of matter as before[2].' These passages will help to explain the precise meaning of the expression, that the displaced Form of the corrupted substance *recedes into the potentiality of the matter*. No Form strictly speaking can be corrupted. It is the composite that is corrupted; and corruption is metonymically predicated of the Form. By the corruption of the substantial composite the Form ceases to be in act. But it is not annihilated, just as it was not created or made. It recedes, then, into the potentiality of matter;—in other words, it is no longer actual, but virtually exists in the matter after such sort that, should the requisite dispositions recur, it can again be educed out of the matter. Thus, for instance, the substantial Forms of oxygen and hydrogen do not exist actually in the water, but they exist virtually; so that by means of the electric spark disposing the matter, they can be again evolved.

Corollary IV.

Since the human soul is a subsisting entity, it may become the

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[1] 'Oportet ergo quod materia secundum se considerata sit in potentia ad formam omnium illorum quorum est materia communis. Per unam autem formam non fit in actu nisi quantum ad illam formam. Remanet ergo in potentia quantum ad omnes alias formas. Nec hoc excluditur, si una illarum formarum sit perfectior et continens in se virtute alias; quia potentia, quantum est de se, indifferenter se habet ad perfectum et imperfectum. Unde, sicut quando est sub forma imperfecta, est in potentia ad formam perfectam, ita e converso.' 1^a^ lxvi, 2, *c.*

[2] 'Formae et accidentia, etsi non habeant materiam partem sui ex qua sint, habent tamen materiam in qua sunt et de cujus potentia educuntur: unde et cum esse desinunt, non omnino annihilantur, sed remanent in potentia materiae, sicut prius.' *P^a^ Q.* v, *a.* 4, 9^m^.

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term of a productive action; but, because it is a spiritual entity, it cannot be either educed out of matter or strictly speaking produced, i.e. made, but must be created. That the human soul is spiritual and subsistent, is assumed as a *Lemma* from psychology.

DIFFICULTIES.

I. The doctrine developed in the last two Propositions contravenes the universal teaching of the Schoolmen, and of St. Thomas in particular, touching the nobility of the substantial Form; since it assigns the latter a position inferior to that of primordial matter. The *Antecedent* is thus proved. On the point of existence the two are equal; since neither can exist save in conjunction with the other. In a similar manner both are dependent; but the dependence of the Form on matter seems to be much more absolute than that of matter on Form. For the Form depends on matter by virtue of presupposition. Its own imperfect entity presupposes the matter as its Subject in order that it may, so to say, begin to be. It is evolved out of the matter. But the entity of the matter is only dependent on the Form for its substantial completion. Lastly: A priority of nature has been claimed for matter over the Form, which evidently supposes the inferiority of the latter to the former.

Answer. The *Antecedent* is denied; seeing that the doctrine of these Propositions has been established, as may be seen, on the authority of St. Thomas. Now, for the two proofs of the *Antecedent*:—It is true, that on the point of their partial existence there is in each an equal necessity for conjunction with the other. It is, moreover, true that each is causally dependent on the other; and it must also be allowed that, in order of genesis, the dependence of the Form on matter is more absolute than the dependence of matter on the Form. But these premisses do not warrant the conclusion. For, in determining the relative superiority or inferiority of the one to the other, we must not regard only or primarily their relative position in order of genesis, but their respective grades in the composite substance. Now, considered in their relation to the composite, the Form is all but incomparably nobler than the matter; since it primarily constitutes the composite, determines its specific nature and specific place in the chain of being, is the source of its natural operations, and moulds matter to its will; whereas the function of

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matter is to sustain and (so to say) individualize the Form. As to the second proof:—The conclusion would be valid, if there were no other and nobler priority of nature than that which has been vindicated for matter. But, as the Angelic Doctor remarks, 'It does not belong to the Form to precede the matter in time, but only in dignity[1].' 'Form, as received in matter, is posterior to matter in order of genesis, though it is naturally prior[2].'

II. It has been more than once stated, in the exposition of the preceding Propositions, that the existence of these substantial bodily Forms apart from matter is an impossibility. But such an assertion contradicts the teaching of St. Thomas, who is constant in asserting that, while matter cannot exist without a Form, Form can exist without matter. Thus, in one place he says, that 'There is nothing to prevent some Form subsisting without matter, though matter cannot exist without Form[3];' and again: 'Though matter cannot exist without Form, nevertheless Form can exist without matter; for matter has being by the Form, and not *vice versa*[4].' In this latter passage he cannot be alluding to spiritual and separated Forms; because these do not give being to matter. Therefore, he seems clearly to maintain that bodily substantial Forms can exist apart from matter.

Answer. St. Thomas, in both the above passages as well as in others similar to these, is treating of Form in the full latitude of its signification, as inclusive of separate and spiritual Forms no less than of those which are material and non-subsistent; but, as we shall see, the main discussion turns on spiritual Forms. Further: It is very necessary to fix attention on the fact, that the point debated is this: Whether matter enters into the constitution of spiritual Forms or substances themselves,—to put it otherwise, whether there can be a finite spiritual substance which is not material. The former of the two passages is taken from an Article in which the question is dis-

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[1] 'Formae autem non est ut tempore materiam praecedat, sed dignitate tantum.' 3 *d.* ii, *Q.* 2, *a.* 3, *q.* 3, 2[m].

[2] 'Forma, secundum quod est recepta in materia, est posterior via generationis quam materia, licet sit prior natura.' 1-2[ae] xx, 1, 3[m].

[3] 'Nihil prohibet aliquam formam sine materia subsistere; licet materia sine forma esse non possit.' *Spiritu.* *a.* 1, 6[m].

[4] 'Licet enim materia non possit esse sine forma, tamen forma potest esse sine materia; quia materia habet esse per formam, et non e converso.' *Spiritu.* *a.* 5, 10[m].

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cussed, *Whether a spiritual substance is composed of matter and Form.* St. Thomas answers in the negative; but proposes the following among other difficulties to his conclusion. The human soul, he urges, subsists in itself; *à fortiori*, an Angel. But it would not seem that a substance subsisting in itself could be a Form only. Therefore, a spiritual substance is not a Form only, but is composed of matter and Form. To this objection St. Thomas replies: 'Although the soul subsists of itself, nevertheless, it does not follow that it is composed of matter and Form; because independent subsistence can appertain to a Form apart from matter.' Then follow the words, quoted in the difficulty: 'For, since matter receives being from the Form, and not *vice versa*, there is nothing to prevent some Form subsisting without matter, though matter cannot exist without Form.' The answer of the Angelic Doctor may be paraphrased thus: The independent subsistence of a Form does not postulate that it should be conjoined with matter. For though matter, in virtue of its essential nature as a pure potentiality, absolutely in every possible case requires conjunction with some Form, in order that by its actuation it may exist; Form, *as* Form, does not require matter in order that it may exist, because it is itself act. A Form, therefore, is capable of existence apart from matter; and, if in any given case incapable, this is not so because it is a Form, but because it is a Form of such an imperfect nature as to be only capable of subsistence in conjunction with matter. Consequently, a spiritual substance, though subsistent in its own right, is not composed of matter and Form; but is a Form only. The second passage quoted in the difficulty is, if possible, plainer still. St. Thomas is engaged in discussing the problem, *Whether there is any created spiritual substance that is not united to a body;* and, of course, he answers in the affirmative. But he opposes to his conclusion the following difficulty: Created spiritual substances are not matter only; neither are they composed of matter and Form. Therefore, they are Forms. But it is of the nature of a Form to be the act of the matter to which it is united. It would seem, therefore, that spiritual substances are united to a body. St. Thomas replies: 'Substances, which are separate from bodies, are Forms only; nevertheless, they are not the acts of any sort of matter. For, though matter cannot exist without Form, Form can exist without matter; since matter has being by the Form, and not *vice versa*.' It is plain, then, that in neither of the two passages is

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he pronouncing directly or indirectly on those non-subsistent bodily Forms that are the object of the present inquiry, and of which St. Thomas declares, in a passage already quoted, that 'their being is in their union with matter[1].'

PROPOSITION CLXXXII.

The eduction of the substantial bodily Form from the potentiality of matter is due to the action of some efficient cause.

The present Proposition has been inserted here, in order to complete the explanation of what is meant by the eduction of the Form out of the potentiality of matter: but the full discussion of the question touching the efficient cause and its causality is reserved for the next Chapter. It will suffice, therefore, for the time being to set before the reader briefly the teaching of the Angelic Doctor touching this point. 'Matter,' writes St. Thomas, 'considered as denuded of all Form, is indifferent to all Forms; but is determined to special Forms by the virtue of the efficient cause[2].' But how is the matter thus determined? By the dispositions implanted in it by the agent. How is it disposed? By a two-fold preparation; one relatively to the efficient cause, the other relatively to the Form about to be evolved. The former is, therefore, ancillary to the latter, and embraces the due disposition of the matter for receiving the action of the efficient cause. In illustration it may, perhaps, be permitted to quote again a passage from the Angelic Doctor, already given under the second Member of the *hundred and eightieth* Proposition. 'The preparation which is required in matter in order that it may receive a Form includes two things; viz. that it should be in due proportion to the Form, and to the agent' (efficient cause) 'whose it is to introduce the Form; because nothing evolves itself from potentiality into act. Now, the proportion due for receiving the action of the agent resolves itself into a due approximation to the agent[3].' The approximation of which St. Thomas here speaks is a local proximity. The due proportion

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[1] *Po*ª *Q.* iii, *a.* 11, 11ᵐ.

[2] 'Materia, prout nuda consideratur, se habet indifferenter ad omnes formas, sed determinatur ad speciales formas per virtutem moventis, ut traditur in 2 de Generatione.' *Spiritu. a.* 3, 20ᵐ.

[3] 4 *d.* xvii, *Q.* 1, *a.* 2, *q.* 2, *c.*

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to the Form is produced by the action of the efficient cause, which in natural generation effects certain accidental changes in the matter, that are virtually directed by the substantial Form of the agent towards the evolution of a Form specifically identical with itself. To take an instance of this twofold preparation:—In dioecious plants the stamens are on one plant, the pistils on another. There must be some contrivance, therefore, for effecting a local proximity between the two, so that the efficient cause may be enabled to dispose the matter of the ovule for the eduction of the particular plant-Form. This local proximity is effected through the pollen of the stamen, which is transported, (by the instrumentality of insects, of the wind, or in some other way), to the pistil. The pollen produces certain alterations in the matter of the ovule, acting by virtue of the substantial Form of the male plant; and these accidental changes so dispose the matter that it eventually evolves a Form specifically identical with that of the parent plant.

Corollary.

'Since every operation of the creature presupposes the potentiality of matter, it is impossible that any creature should bring any Form into existence, which is not educed out of the potentiality of matter[1].' 'Thus, then, such inferior bodily agents' (secondary efficient causes) 'are not the principiants of the Forms in things that are made, save so far as the causality of transmutation can extend, since they only act by transmuting; and this they do, in so far as they dispose the matter and educe the Form from the potentiality of the matter. As regards this, then, the Forms of things generated depend on the generating agents, according to the order of nature, for their eduction out of the potentiality of matter, but not for their absolute entity. Accordingly, as soon as the action of the generator is removed, the eduction of the Forms from potentiality to act ceases; and it is in this that the process of generation consists. Nevertheless, the Forms themselves, by which the things generated have being, do not cease. Hence it is, that the being of the things generated remains but not their production, when the action of the generating entity ceases[2].'

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[1] 'Cum omnis operatio creaturae praesupponat potentiam materiae, impossibile est quod aliqua creatura aliquam formam producat in esse, quae non educitur de potentia materiae.' 1 *d.* xiv, *Q.* 3, *c.*

[2] 'Sic igitur hujusmodi inferiora agentia corporalia non sunt formarum principia in

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PROPOSITION CLXXXIII.

The eduction of the substantial Form out of the potentiality of matter does not necessitate a priority of matter over the Form in order of time; since it suffices that there should be a priority of nature.

PROLEGOMENON.

The present and two succeeding Propositions have been added, in order to meet a considerable difficulty arising out of the Scholastic doctrine concerning the eduction of the Form out of the potentiality of matter in the genesis of material substances. In the generation of mixed or compound bodies, whether animate or inanimate, there can be no question about the priority of the matter over the Form; since *de facto* the matter is prior to the Form even in order of time. Thus, for instance, the matter exists antecedently in the seed, in earth, in air, in water,—and must have existed under one Form or another since the first day of the creation,—which is actuated by the plant-Form of *this* plant of *to-day*. In like manner, the matter which is now under the Form of sulphuric acid existed previously under the respective Forms of sulphur and oxygen, thus entering into the constitution of two distinct substances. But the Angelic Doctor teaches, that a certain number of elements (or simple bodies) were originally created by God, and that the matter and Form of these elements were concreated in the composite. Now, the difficulty is about these elements; for, since they were created by God in their integral nature; it is evident that the matter could not have forestalled the Form in order of time. But neither, as it would seem, could matter claim any priority of nature over the Form; because, since the two were concreated, the Form in the case of these elements

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rebus factis, nisi quantum potest se extendere causalitas transmutationis; cum non agant nisi transmutando, ut dictum est quaest. 3, art. 7 et 8; hoc autem est inquantum disponunt materiam, et educunt formam de potentia materiae. Quantum igitur ad hoc, formae generatorum dependent a generantibus naturaliter, quod educuntur de potentia materiae, non autem quantum ad esse absolutum. Unde et remota actione generantis, cessat eductio formarum de potentia in actum, quod est fieri generationem; non autem cessant ipsae formae, secundum quas generata habent esse. Et inde est quod esse rerum generatarum manet, sed non fieri, cessante actione generantis.' *Pot. Q.* v, *a.* 1, *c.*, *p. m.*

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could not have been evolved out of the potentiality of matter. It could, therefore, have had no dependence on matter for its genesis; and as to the obvious dependence in the constituted composite, *that* is mutual. The Form depends on the matter, and the matter on the Form. But again: If God concreated the substantial Form with the matter, it also follows that in the case of these elements the matter was not the genetic Subject of their substantial Forms; since, if these Forms at their birth were acts of the matter, they could not be even a partial term of creative action, because to create is to make out of nothing. Such is the problem which must be satisfactorily solved, unless we are prepared to abandon the explanation given in the preceding Theses.

NOTE. Some readers of this Work may be puzzled to understand, how a *simple* body without contradiction can be called, (as it has been called in the above Prolegomenon), a *composite*. Wherefore: That which, chemically considered, is a simple body may be physically composite,—nay, must be so, for as long as it is truly a body. A simple body, chemically so called, is a material substance which cannot be resolved into any component substances; whereas a substance is physically simple, if it is incapable of resolution into physical parts whether substantial or accidental.

The Proposition is demonstrated in the following manner. In order to the eduction of the Form out of the potentiality of matter, there is no necessity,—either on the part of the matter, or on that of the Form, or on that of the composite, or on that of the efficient cause,—that the matter should be prior to the Form in order of time, provided that it can claim a priority of nature. Therefore, etc. The *Antecedent* embraces four Members, which will be discussed separately.

i. No such necessity is discoverable on the part of the material cause. Matter, in its relation to the Form, may be considered from two points of view; viz. either as primordial matter, i. e. a pure passive potentiality, or as separated off and specially disposed for the reception of such or such a particular Form. Considered as a purely passive potentiality, so far is it from claiming priority of time over the Form, that its existence is a metaphysical impossibility, (be it said with all due respect for the authority of Suarez who maintains the contrary opinion), save in conjunction with some Form. All that it postulates, as being imbibed in its very nature, is, that it should be naturally prior to the Form. But

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this is fully verified, even when its existence and particular information are simultaneous; provided that the Form still exhibits dependence on the matter as its Subject both for its origin and continuance. That it depends upon matter for its continuance in being, needs no proof; that, in the case of the elements, it was likewise dependent on the matter for its origin, will be declared in the next Proposition. Now let us turn our attention to matter, as separated off and specially disposed for such or such a particular Form. It is plain that it must be separated off, or quantified; otherwise, the whole of matter would be actuated, and not a portion only. It is no less plain that the particular portion of matter must be specially disposed for the reception of the designated Form; because, if it were not so, there would be no sufficient reason why the matter should evolve this particular Form rather than any other. Such a hypothesis would necessitate a purely arbitrary act of creation, not an orderly eduction of the Form out of the potentiality of matter. We may omit, then, from the present inquiry all consideration of the immediate dispositions, because these are confessedly synchronous with the eduction of the Form. But what can be said as to the remote dispositions? Their very name seems to imply a priority of time over the Form on their part and, as a consequence, on the part of the matter which they dispose. True; yet it occurs to inquire, why it is that these dispositions are remote. Surely, in themselves they offer no sufficient reason; because there is nothing in the nature of a disposition *as such* to render it remote rather than proximate, save so far as remoteness connotes some sort of imperfection in the disposition. Such imperfection, however, is not essential to the disposition itself; and, accordingly, is attributable to the limited energy or imperfection of the efficient cause which can only operate, as it were, by degrees. When, then, it is question of the infinite Efficacy of the First Cause; there is nothing, on the part of matter, to hinder the concreation of matter with all its attendent dispositions synchronously with the eduction of the Form.

ii. A necessity for the priority of matter over the Form in order of time is not discoverable on the part of the Form. For all that the Form requires for its partial existence is, that it should have a Subject out of which it may be educed and by which it may be supported in existence. This is possible to it by virtue of that priority of nature which is essential to the material cause. But it

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is not necessary to the Form that its Subject should have a temporal priority of existence. It only needs a Subject at the time that it is educed; and, as the eduction is instantaneous, all that is absolutely required is, that at the same instant the Subject should be at hand. It can have no natural need, for so long as itself is nothing; and it is nothing up to the moment of eduction.

iii. The said necessity is not discoverable in any supposed claims of the composite substance; for *ex parte rei* the eduction of the Form is the constitution of the composite. If, therefore, neither the matter nor the Form exhibits any such necessity; the composite, which is essentially and exclusively constituted by the two, cannot show any reason for it.

iv. Lastly, this necessity is not to be discovered in the efficient cause; for, seeing that the Power of God is infinite, He can do everything that does not include a contradiction in terms. But the previous arguments suffice to show, that it is no contradiction in terms to assert the synchronous production of matter and Form. Therefore, etc.

So far, so good. But, if the production of matter and Form in the primordial elements were synchronous, is it possible in their case to maintain a priority of matter over Form *in order of nature?*

PROPOSITION CLXXXIV.

In the creation of the primordial elements the substantial Form was educed from the potentiality of matter. Hence, the infinitely simple operation by which these elements were created was equivalent to that which may be considered as two partial actions, one of which we may conceive as terminated to the concreation of matter, the other to a concreative eduction of the Form.

Prolegomenon I.

To a concreative Act,—that is to say, to an Act of creation which is terminated by two or more partial entities constitutive of the thing created,—it suffices that each entity in the adequate act of creation should be made out of nothing. It matters little, therefore, if the conditions of existence are essentially different in the instance of the two partial terms. One may be the Subject of the

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other, the latter act of the former; yet the two, together with their mutual relations, be constituted by the one adequate act of creation.

PROLEGOMENON II.

According to Suarez[1], who holds an opinion differing from that which is here defended, there are four different kinds of efficient action. The first is productive, and not unitive; and has for its term a physically simple entity. The creation of an Angel or of a human soul may be taken as an instance. The same Doctor adds that, in his opinion, such was the creation of primordial matter. Since he likewise maintains that primordial matter could be preserved in existence apart from any Form by the Divine Omnipotence, (about which we shall see later on), he is herein consistent with himself; but for those who follow the teaching of St. Thomas, who denies the possibility of the independent existence of matter, the opinion of Suarez is beset with insuperable difficulties. The second kind of efficient action is only unitive, and not productive of the constituents of the union. Such is the generation of man; wherein the generation of the body and the creation of the soul are presupposed. Thirdly, there is another efficient action which produces the composite in such wise as simultaneously to comproduce and unite the components. Such, according to Suarez, was the creation of the heavens, 'which evidently was primarily terminated to the composite, and concomitantly to the matter and the Form.' Such, (as is here maintained), was the creation of the primordial elements. The fourth and last kind of efficient action is at once comproductive of one component part of the composite, and,—the other component part being presupposed,—is unitive of the two. Such, according to Suarez, is the eduction of the substantial Form and the constitution of the element. How far this doctrine of Suarez can be accepted, will be understood from the declaration of the Thesis. Meanwhile, the knowledge of it will not be without its advantage.

The present Proposition consists of two Members. In the first it is asserted that, in the creation of the primordial elements, the substantial Forms were educed,—in all essential respects as these Forms now are,—out of the potentiality of matter, according to the explanation given in an earlier part of this Article. In the second it is maintained, that the Creative Act by which these

[1] *Metaph. Disp. XV*, § 4, *n.* 5.

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elements were produced, was equivalent to what we may conceive as two partial actions,—the one terminated to the concreation of matter, the other to the concreative eduction of the Form.

I. THE FIRST MEMBER declares that *in the creation of the primordial elements the substantial Forms were educed out of the potentiality of matter.* This proposition is supported by the following arguments. First of all, it was more consistent with the harmony of the physical order. It is plain from what has gone before, that all material substances, the primordial elements included, are essentially composed of two constituents,—matter, and a substantial Form. It is further admitted that, in the instance of all the other material substances, the Form is educed out of the potentiality of the matter. It seems, then, more consistent with the infinite Wisdom of the First Cause,—in the absence of any grave reasons to the contrary,—to suppose that the primordial elements, which are the sole foundation of the whole visible universe, should be constituted on precisely the same principles as all the other substances which have been gradually evolved out of them. It is true that this argument is not, strictly speaking, demonstrative; nevertheless, it must be allowed to have its weight. But, secondly, the proposition can be demonstrated from the constant corruption and generation of these elements. For the sake of illustration we will suppose with modern chemists, that phosphorus is one of these elements, or simple bodies. We know that by due combination with oxygen phosphoric anhydride is obtained. The phosphorus in this process is corrupted, as the metaphysician would say; in other words, its substantial Form is displaced to make way for the form of the new compound. On the other hand, the Form of phosphorus only exists potentially in the phosphates that are so abundant in bones; but by chemical analysis the phosphorus can be isolated, or (as the Scholastic philosopher would say) the Form of phosphorus can be educed out of the potentiality of the matter. Let us take one more instance. Among the credited elements of modern chemistry, there is not one whose title to a place among them is so unquestioned as hydrogen. Now, if hydrogen be combined with chlorine, the Forms of both substances recede into the potentiality of the matter, and the Form of hydrochloric acid supervenes. Hence, hydrogen can be corrupted. If, again, you plunge a piece of zinc into sulphuric acid, the hydrogen is liberated, as the physicist would say; to speak metaphysically, the Form of

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hydrogen is evolved out of the potentiality of the matter. Hence, hydrogen can be generated. If, then, the Forms of phosphorus and hydrogen can be now educed out of the potentiality of matter, now expelled from the same matter by the introduction of another Form; it follows,—unless we are prepared to adopt the strange hypothesis, that God originally created the nature of the elements in one way and afterwards entirely changed it,—that God so created the element as that its Form should be evolved out of the potentiality of the matter. A confirmation of this argument is derived from the final cause of the elements; for they were created to be the one basis of all physical evolution. But this they could not be, unless they were constituted, like all other material substances, by Forms dependent on matter for their genesis and continued existence—in other words, on Forms that were educed out of the potentiality of matter.

II. In the Second Member of the Proposition it is affirmed, that *the Creative Act by which the elements were produced was equivalent to what we may conceive as two partial actions,—the one terminated to the concreation of the matter, the other to the concreative eduction of the Form.* It will be more intelligible to the reader if, in a question which is not a little abstruse, the declaration should be so methodized as to proceed, step by step, from that which is comparatively clear to that which is more obscure. Wherefore,

i. As we have seen in the preceding Thesis, it is quite evident and, indeed, is not disputed, that there was no priority of time in the production of primordial matter. Hence, at one and the same instant God created the element, concreated the matter and educed the Form.

ii. It is equally evident and is also universally admitted, that the adequate term of the Divine operation is the element itself. The two constituents, the matter and the Form, are only partial and secondary terms; for these latter are for the sake of the composite, while the composite is for itself.

iii. The Divine act of creation by which these elements were constituted in existence may be considered as virtually embracing two actions which we may conceive as distinct, though partial. There are two apparently solid arguments which have been adduced in favour of this position. The one is derived from the Divine act of preservation by which all contingent entities are retained in being for such time as each exists. Now, as will be

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seen in Natural Theology, the Divine act of preservation is nothing more or less than the Divine act of creation or production persevering, so far as it is terminated, of course, to those entities which have been created or produced by God. Hence, we are perfectly safe in arguing from the characteristics of the things preserved to the characteristics of the same things as originally created or produced. But we find a marked difference between the law of Divine preservation in the instance of matter and in the instances of the Form and composite. Matter is preserved immutable throughout time. It is incapable of generation and corruption. The conservation, on the other hand, of Form and composite is for a time only. There are continuous changes of both Forms and composites. The latter are subject to generation and corruption; the former to eduction and expulsion,—to coming and going. But, if by one and the same Divine action the matter, Form, and composite were created indifferently; there could not be these marked differences in the Divine preservation of the three. The other argument is derived from the respective natures of matter, Form, and composite; for nothing can be more sure than that they must have been produced by the Divine Wisdom according to the nature of the entity which they now possess. But matter, as we have seen, is absolutely the first Subject. It presupposes nothing beyond itself. Consequently, it must have been created in the strictest sense of the word; because it must have been produced out of the nothingness of itself and of Subject,—that is to say, absolutely out of nothing. The Form, on the other hand, though produced (so to speak) out of the nothingness of itself, is evolved out of the matter as its Subject; while the composite is the conjunction of the two. But evolution and production are distinct acts from creation. Hence it would seem to follow that, properly speaking, nothing was created but primordial matter.

iv. Though there is some foundation of truth in these arguments and in their conclusion, (otherwise, there would have been no need for the present Thesis); yet there is a certain exaggeration in the way they are expressed and sundry latent assumptions emanating from the particular theory maintained by Suarez, as will appear from the following exposition of this Member of the Proposition.

v. It is plain, as has been noted, that the composite element was the primary and adequate term, the matter and Form partial and

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secondary terms, of the Divine act of creation. We say, then, with St. Thomas, that the two constituents were concreated and that the composite was created;—or, more accurately, that the constituents, Form and matter, were concreated in the creation of the composite. To explain and illustrate the meaning of this assertion:—God in the beginning created the element, and by so doing, concreated in the element the matter and the Form, each according to the special exigency of its own partial entity. Now, it is true that matter, as first Subject, must in the strictest sense of the word be created, if matter can by itself become the term of any productive action. But this is impossible. If produced, it would be actual; so that in such a hypothesis it would be actual without its act, which is a contradiction in terms. Therefore, in order to exist it must be concreated,—that is to say, must be created by one and the same action together with its Form. In other words, its actual creation essentially included that of the substantial Form. The two were concreated by one and the same Divine operation. But, if so, how in any real sense can these Forms of the elements be said to have been educed out of the potentiality of the matter? Here it is that Suarez seems to exaggerate by implication. He makes too much of these material Forms. It should be remembered that they are simply the acts of matter,—that they are that by which the composite is, rather than entities themselves, as St. Thomas is so frequent in enforcing. Consequently, if the Form was to be concreated at all,—which is the same as saying, if the composite element was to be created at all,—it must be produced as act of the matter, according to its nature. Matter was concreated in act; therefore, the Form was concreated in the matter as its act. Whence it follows, that there is no need of a unitive action such as Suarez has invented; for existence in the matter is of the essence of the Form. To exist is to be united; because it is essentially and exclusively the act of matter. But, if so, what then,—to return to the original question,—about its being educed out of the potentiality of matter? Let us see. There are two elements in the concept of eduction, as we know of it from natural generation. The one is positive, real, essential; viz. that the Form should be produced in dependence on the matter both in its production and in the perfected constitution of the composite. The other is negative, an extrinsic denomination, and accidental; viz. that the subject should not be com-

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produced with it, but should pre-exist. It is this latter element in the concept which has given rise to much of the difficulty that besets the present problem; at least, so it would seem. If the matter exists previously to the eduction of the Form,—which is invariably the case in natural generation,—it would then be impossible to call such an eduction a creation in any true sense of the word, much less a concreation; although the Form was concreated *virtually* in the matter according to the explanation given in a previous Thesis. But it must be remembered that neither is it produced nor made, properly speaking, but educed; the composite substance it is that is produced. If it may be allowed to coin a word for the occasion, the whole operation consists in a *transactuation* of the matter, resulting in the production of a new substance. But when the production of the matter is synchronous with the production of the Form and with the constitution of the element; as the element is created, so the matter and Form are concreated in it, since the element is nothing but the matter in such or such an act. Yet the Form is concreated as educed from the potentiality of the matter; because it is concreated as act of the matter and, consequently, dependent on the matter in the genesis and constitution of the composite element. Further: Since the Form is not an entity in itself, but that by which an entity (viz. the composite substance) is; it is impossible that there should be two distinct actions. Wherefore, it is nearer the truth to say that God, in creating the element, concreated the matter and the Form as the constituents of the element according to their respective natures,—the primordial matter with its universal potentiality, and the substantial Form as act of the matter and, therefore, as arising out of it and essentially dependent upon it. He created *actuated* matter, for matter could not possibly be created otherwise; therefore, He concreated matter and its act,—that is to say, its Form.

Two objections may be brought against the above explanation. The one is, that in all composition the components are prior to the composite. Therefore, two actions at the least are required,—the one for the production of the components, the other for the constitution of the composite. The answer to this difficulty is, that when the components are,—or even one of the components is,—prior in order of time to the composite, two actions are undoubtedly requisite. When the components are prior in order of nature only, (and this they always must be); there is need of a distinction. If

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the components are complete entities, it may be conceded that two actions are necessary. But, when the two components are essentially partial and depend, each upon the other for their existence and the completion of their entity, there is no such necessity. The other objection is suggested by the first argument given above to prove the necessity of two distinct actions in the production of the composite. For if by one and the same Divine operation the matter and the Form were concreated in the creation of the element; it seems impossible to understand how it can be that the matter should be preserved indestructible, immutable, while Form after Form appears and disappears, and material substances are ceaselessly generated and corrupted. But this difficulty vanishes, if we do not lose sight of the fact that, in their concreation, matter and Form were produced according to the exigence and capacity of their respective natures. Matter was concreated as first Subject. Therefore, it could not be corrupted, or changed. It could only be annihilated by a cessation of the Divine act of conservation. It was likewise concreated as a passive potentiality receptive of all Forms included in the design of the Creator. It is capable, therefore, of multiplex successive actuation, or transformation. The substantial Form, on the contrary, was concreated as act of the matter; and, seeing that the matter is capable of an indefinite series of actuations, its duration necessarily depends, by virtue of the mode of its concreation, upon the possible dispositions of the matter. In a word, as the Divine operation in the concreation of matter and Form produced each according to its special nature; in like manner does the Divine Will preserve them. There is, therefore, a complete parallelism between the two Divine acts and their terms.

If, however, the above declaration is true, a fresh difficulty of another kind arises. It is not easy to understand why the Divine creation of the elements is represented in the Enunciation as equivalent to two distinct actions,—or rather as conceivably thus equivalent. It remains to add, therefore, that the Divine operation may be so conceived, because it is equivalent to two really distinct actions in natural generation. Another reason is, because the Divine act of creation is partially terminated by two partial entities so different in their nature; so that the concreation of the one is terminatively distinct from, and in some respects opposite to, the concreation of the other.

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Lastly: the explanation here given is confirmed by an argument derived from the accidental information of the elements. It is quite certain that these elements must have been quantitatively divided off from each other; and further, that the quantity in each case,—or rather, the substances through the quantity,—must have been informed by the qualities proper to each. Now, as the eduction of an accidental Form differs from that of a substantial Form in one way as much as (one would be inclined to say, more than) the production of the matter and the production of the Form in another way; the opinion of Suarez would necessitate an inconvenient multiplication of distinct Divine acts in the creation of each element; whereas, according to the explanation given, the quantitative and qualitative accidents would have been concreated with each material substance according to the order of their respective natures.

PROPOSITION CLXXXV.

The action by which the Form is educed from the potentiality of matter and that by which the composite is constituted are essentially one and the same; whether the substance has been Divinely created or produced by the natural operation of secondary causes.

The truth of this Proposition follows as an evident Corollary from the doctrine expounded in the foregoing Theses. What have we seen to be the nature of material substance? It is an entity essentially composed of matter and Form; in other words, any given material substance,—say, the element called hydrogen,—is *this* portion of matter actuated by *this* substantial Form. Now, to educe the Form out of the potentiality of matter is in every way identical with the actuation of the matter; for the Form, in its beginning to be and in its continuing to be, is essentially dependent on the matter. The composition of a material substance is not like the composition of certain manufactured goods, where two complete substances are brought together and mechanically united. A material substance is composed of a passive potentiality and its act; and the actuation of the potentiality is *ipso facto* the constitution of the substance. It needs no distinct unitive action to compound two entities that cannot be made to exist apart even by miracle. Therefore, the eduction of the Form is the constitution of

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the substance. But, if this is so, why have two names been given to one and the same action? For the action in its relation to the Form is called *eduction;* in relation to the composite substance is called *creation* or *generation.* Two observations will afford a sufficient answer to this difficulty.

i. There are two terms of this action,—as indeed of many others, notoriously of that connected with works of art. The one is called the *term which,* (called by the Doctors of the School the *terminus qui,* or *ut quod*); the other, the *term by which* (the *terminus quo*). The former is that which is principally and absolutely intended by the action, and by it the action is adequately terminated. The latter is that which is intended as a means by which the former is produced. For instance, in the construction of a chair the artificial form is the *terminus quo;* the chair itself is the *terminus qui.* The carpenter simply intends the latter as the end of his labour; he aims at producing the shape in the wood, as the only means of making the chair. When he has perfectly produced the shape in the wood, the chair is made.

ii. There is a conceptual distinction in the nature of the action considered terminatively,—that is to say, in its separate relation to the two aforesaid terms. In the secondary *term by which,* the matter does not enter as an intrinsic constituent. Thus, the stone is no intrinsic constituent of the form of the statue. Accordingly, though the Form is in and of the matter; the matter is not in the Form. But in the composite substance,—the *terminus qui,*—both matter and Form are intrinsic constituents. Thus, the stone and the shape, or outline, together constitute the statue. For these reasons the Form is said to be *educed* out of the potentiality of the matter; while the composite substance is said to be *created, produced, generated.* Nevertheless, the productive action is one and the same.

Summary.

I. The eduction of the substantial Form out of the potentiality of matter includes in its concept a double element; since it is partly *negative,* partly *positive.*

i. Considered *negatively,* the phrase connotes the following. *a.* The Form is not so much an entity itself as cause of entity in another. *b.* The Form, by reason of its imperfect entity, cannot become the adequate term of either creative or productive action.

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c. For the same reason existence is not absolutely predicable of the Form. *d.* The Form cannot be produced by itself, but must be developed out of another. *e.* It cannot continue by itself, but requires the support of another on which it may depend.

ii. Considered *positively*, the phrase connotes the following. *a.* Primordial matter claims priority of nature over the Form in the genesis of material substance. *b.* Primordial matter is the source from which the Form springs, because the latter is the substantial act of the former. *c.* The Form is virtually precontained in the matter. *d.* Primordial matter is the Subject of the Form and absolutely necessary to its existence and partial subsistence.

II. The creation of the primordial elements was, even according to our human way of conceiving, one single Divine operation; yet conceptually equivalent to two distinct actions according to the analogy of natural generation. These two virtual actions are solely differentiated by the diversity of nature in their respective terms. By one Divine action, therefore, the composite element was created, and in it were concreated the matter and substantial Form; together with it were created the quantity with its qualities.

III. Because the composite is the *terminus qui*, the substantial Form the *terminus quo;* the latter is said to be *educed*, the former to be *created* or *generated.*

ARTICLE IV.

Substantial bodily Forms in their relation to the order of nature.

To such as have already made acquaintance with the Scholastic Philosophy it may possibly seem that the discussion suggested by the title of the present Article belongs more properly to physics than to metaphysics, since their subject-matter is more closely connected with the existence, than with the essence, of material substances. Others, again, who are addicted to the modern division of metaphysics into general and special, (a division which is obnoxious, be it said parenthetically, to more serious objections than its novelty), may consider that we are trespassing upon the property of cosmology. Reasons, however, of great weight and cogency have induced the writer to include them in the present Work, and will, it is to be hoped, reconcile the reader to their appearance here. Among these the foremost is that the Angelic Doctor has admitted the consideration of these questions into treatises more or less

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prominently metaphysical; so that not only is there the highest authority for their introduction, but an occasion, which may not easily recur, is afforded of making known in English the teaching of St. Thomas touching these most interesting truths. There is another which it may be worth while to mention. The subject on which we are about to enter is so intimately connected with the questions that have gone before and those which have yet to follow, that (as it may be hoped) the consideration of it will throw considerable light on both. Nevertheless, it must be added that the writer purposes to treat them exclusively from a metaphysical point of view. There is one momentous inquiry which, though it has secured for itself a foremost place in public attention of late years, he has deemed it advisable to omit from the body of the Work, as trenching upon the sphere of physics. It is the inquiry into the genesis of material things. The teaching of St. Thomas, however, on this point will be summarized in one of the *Appendices* at the end of the present Chapter.

That there are specific differences in the material world, is patent to sense. Nor would any man of sound mind be likely to gainsay the existence of a unity of order in the things of nature. A philosopher, however, cannot rest contented with the facts; for these, of themselves, are not knowledge properly so called. It is his duty to ascertain the causes of this order; for true science is a knowledge of things from their causes. But, if this holds good at all times, more especially is it necessary in our own day. For the greater number of those eminent physicists, who have so justly acquired a reputation among us by reason of their patient research and their interesting discoveries in the various branches of physics, seem to have relapsed into the unaccountable error which Aristotle lays to the charge of the earliest philosophers,—viz. into that of ignoring the existence of any cause save the material. But that matter which is the common substratum of all visible things,—the first Subject,—a pure passive potentiality,—undifferentiated,—indeterminate,—should be capable of evolving itself into multiplicity of difference governed by a definite order without some intrinsic cause of determination and without an extrinsic cause of its evolution, is a hypothesis which, one would think, must perish beneath the weight of its own absurdity. Who can imagine it to be really possible,—nay, who can imagine at all,—that a purely passive potentiality can unaided so differentiate itself as to make itself not

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itself, but millions of things other than itself, which are yet itself? Further: Different bodies have different natural energies, different qualities. Some have powers of attraction and affinity, others of assimilation and growth, others of sense and imagination. In animal life what varieties there are in the composition of the body! Some have an inferior and rudimentary structure, like the *protozoa;* others a higher and more complex structure and organism, like the *crustaceans;* the *placental mammals* have a yet more perfect structure and organism. Again: Some bodies are naturally sweet, some bitter; some are of one colour, some of another; some are wholesome, others are poisonous; some have hair, others not; and so on. But we ought not to rest contented with the bare facts. It behoves us to discover the *why*, if possible. The present Article, then, will be devoted to an examination into the intrinsic cause of all the specific and accidental varieties in material substances, as well as of the order of regular gradation from lowest to highest discoverable in them.

PROPOSITION CLXXXVI.

According to the teaching of St. Thomas, the final cause of the visible creation postulates a diversity in material substances.

Prolegomenon I.

There are two truths of philosophy, which are assumed as *Lemmata* in the present Proposition. The one is the doctrine of final causes, which will be established in the *fifth* Chapter of this Book. The other is the fact of a creation, which is assumed from the future treatise of Natural Theology in the *ninth* Book. It should further be added, that the objective reality of the material universe is assumed from ideology. This latter point, however, will scarcely be called in question by those for whose sake more particularly these discussions have been introduced. Physicists are not naturally prone to idealism; for their tendency is rather in a contrary direction. With scarcely an exception they would be ready to admit the objective reality of the material universe and the truth of our sensile perceptions of it, so far as these go; which is all that is needed.

Prolegomenon II.

It is also assumed as a *Lemma* from Natural Theology, that the

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final cause of the creation is the manifestation in the creature of the Goodness and Perfection of God.

Declaration of the Proposition.

Since the main intention of this and the succeeding Theses is to exhibit and develope the teaching of the Angelic Doctor, as may be seen from the Enunciation; a passage from his writings shall be here prefixed, which will serve as a foundation for the entire doctrine about to be submitted to the reader's consideration.

'It has been already pointed out in a previous Chapter,' writes St. Thomas, 'that God by His Providence ordains all things to the Divine Goodness as to their End; not, however, as though anything can be added to the Divine Goodness by the things that are made, but in order that the likeness of His Goodness may be imprinted, so far as it is possible, upon entities. Now, since all created substance necessarily falls short of the perfection of the Divine Goodness; in order that a likeness to the Divine Goodness may be communicated to entities in greater perfection, it was necessary that there should be a diversity in entities, so that what cannot be perfectly represented by any one in particular, might be represented by different entities in different ways after a more perfect manner. For man, in like manner, as he perceives that he cannot sufficiently express the concept of his mind by one spoken word, multiplies words in various ways in order to express the thought of his mind by a diversity of expressions. In this, moreover, may be seen the eminence of the Divine Perfection; viz. that the Perfect Goodness, which in God is unitedly and simply one, cannot exist in creatures save according to difference of measure and by means of a plurality of beings. Now, beings are diverse by reason of their having a diversity of Forms, from which they acquire their specific species,' or their specific nature. 'Thus, then, the reason for the diversity of Forms in entities is gathered from their final cause.

'Again: From the diversity of Forms we gather the reason of order in beings. For since the Form is that by which an entity has being, and every entity by reason of its having being approaches to the likeness of God Who is His own simple Being; it necessarily follows that the Form is no other than a participation of the Divine likeness in entities. Hence, in unison with this conclusion, Aristotle in the first Book of the *Physics*, speaking of Form declares

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that "it is something Divine and object of desire." Now likeness, considered in its reference to that which is Simple Unity, cannot be diversified save inasmuch as the likeness is more and less near or remote. But by how much anything approaches nearer to the Divine likeness, by so much is it more perfect. Wherefore, Aristotle in the eighth Book of his *Metaphysics* compares definitions, by which the natures and Forms of things are denoted, to numbers in which the species are varied by addition or subtraction of unity; so that in this way we may be given to understand, how that a diversity of Forms requires a diversity of grade in perfection. This is, moreover, plainly evident to any one who contemplates the nature of entities. For a man will find, if he diligently considers, that the diversity of beings is completed in ascending steps; since he will find plants above inanimate bodies, above these again irrational animals, and above these intellectual substances. Moreover, under each of these orders he will find a diversity, accordingly as some are more perfect than others,—in such wise that those which are highest in a lower genus are seen to approach the higher genus, and conversely. For instance, animals incapable of locomotion are like plants. Hence, Dionysius in his Work on *the Divine Names* says, that the Divine Wisdom joins on the last of the superior to the first of the inferior. Wherefore, it is plain that a diversity of beings demands that they should not be all equal, but that there should be an order and gradation in beings.

'Again: From diversity of Forms, according to which the species of entities are diversified, there follows likewise a diversity of operations. For seeing that everything acts accordingly as it is in act, (for those things which are in potentiality, exclusively as such, are seen to be destitute of action), and since each entity is in act by virtue of the Form; the operation of an entity must necessarily follow its Form. Therefore, if the Forms are diverse, they must necessarily have diversity of operations. Further: Forasmuch as everything attains to its own proper end by its own proper action; it is a necessary consequence that the proper ends likewise should be diversified in entities, albeit there is a final end common to all.

'There follows likewise from the diversity of Forms a diversity in the relation of matter to entities. For, since Forms are different in that some are more perfect than others, there are some among them so far perfect that they are subsistent in themselves and in a perfect manner, not requiring the support of matter for anything;

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while others cannot perfectly subsist of themselves but require matter for a basis, so that the subsistent entity is not Form only or matter only, (which of itself is not actual being), but a composition of both. Now, matter and Form could not unite to constitute any one entity, unless there were some sort of proportion between them. But, if they must be proportioned, diversity of matter must necessarily answer to diversity of Form. Hence it comes to pass that one Form postulates simple, and another composite, matter; and, in accordance with a diversity of Forms, a different composition of the parts' or organization 'is rendered necessary, agreeably with the specific nature of the Form and the operation of the same.

'Again: From a diversity in the relation of matter there ensues a diversity in agents and in entities that are submitted to the action. For, since everything acts by virtue of the Form, and is acted upon and moved by virtue of the matter; it is of necessity that those entities, whose Forms are more perfect and less material, should act upon such entities as are more material and whose Forms are less perfect.

'Further: From a diversity of Forms and of matter and of agents there ensues a diversity in properties and accidents. For, since substance is cause of accident, as that which is complete of that which is incomplete; from a diversity in the substantial principiants there must necessarily follow a diversity of properties.

'Once more: Since a diversity of impressions is made upon the entities that are subject to those impressions from the diversity of agents, according to the diversity of agents there must necessarily be a diversity of accidents imprinted by those agents[1].'

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[1] 'Ostensum est enim (cap. 91) quod Deus per suam providentiam omnia ordinat in divinam bonitatem sicut in finem; non autem hoc modo quod aliquid suae bonitati per ea quae fiunt accrescat, sed ut similitudo suae bonitatis, inquantum possibile est, imprimatur in rebus. Quia vero omnem creatam substantiam a perfectione divinae bonitatis deficere necesse est, ad hoc ut perfectius divinae bonitatis similitudo rebus communicaretur, oportuit esse diversitatem in rebus, ut quod perfecte ab uno aliquo repraesentari non potest, per diversa diversimode perfectiori modo repraesentaretur; nam et homo, cum mentis conceptum uno vocali verbo videt sufficienter exprimi non posse, verba diversimode multiplicat ad exprimendam per diversa suae mentis conceptionem. Et in hoc etiam divinae perfectionis eminentia considerari potest, quod perfecta bonitas, quae in Deo est unite et simpliciter, in creaturis esse non potest nisi secundum modum diversum et per plura. Res autem per hoc diversae sunt quod formas habent diversas a quibus speciem sortiuntur. Sic igitur ex fine sumitur ratio diversitatis formarum in rebus.

'Ex diversitate autem formarum sumitur ratio ordinis in rebus. Cum enim forma sit secundum quam res habet esse, res autem quaelibet, secundum quod habet esse,

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The declaration of the present Proposition will consist in a development of the earlier clauses contained in the first paragraph of

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accedat ad similitudinem Dei, qui est ipsum suum esse simplex, necesse est quod forma nihil sit aliud quam divina similitudo participata in rebus. Unde convenienter Aristoteles, de forma loquens, dicit quod *est divinum quoddam et appetibile.*' (*ὄντος γάρ τινος θείου καὶ ἀγαθοῦ καὶ ἐφετοῦ*; Physic. L. i, c. 9, v. m.) 'Similitudo autem, ad unum simplex considerata, diversificari non potest, nisi secundum quod magis et minus similitudo est propinqua vel remota. Quanto autem aliquid propinquius ad divinam similitudinem accedit, (tanto) perfectius est. Unde in formis differentia esse non potest nisi per hoc quod una perfectior existit quam alia; propter quod Aristoteles (Metaphys. 8[1]) definitiones, per quas naturae rerum et formae signantur, assimilat numeris, in quibus species variantur per additionem vel subtractionem unitatis; ut ex hoc detur intelligi quod formarum diversitas diversum gradum perfectionis requirit. Et hoc evidenter apparet naturas rerum speculanti. Inveniet enim, si quis diligenter consideret, gradatim rerum diversitatem compleri. Nam supra inanimata corpora inveniet plantas, et super has irrationabilia animalia, et super haec intellectuales substantias. Et in singulis horum inveniet diversitatem, secundum quod quaedam sunt aliis perfectiora; intantum quod ea quae sunt suprema inferioris generis videntur propinqua superiori generi, et e converso; sicut animalia immobilia sunt similia plantis. Unde et Dionysius (de Divin. Nomin. c. 7) ait quod *divina sapientia conjungit fines primorum principiis secundorum.* Unde patet quod rerum diversitas exigit quod non sint omnia aequalia, sed sit ordo in rebus et gradus.

'Ex diversitate autem formarum, secundum quas rerum species diversificantur, sequitur et operationum differentia. Cum enim unumquodque agat secundum quod est actu, (quae enim sunt in potentia, secundum quod hujusmodi inveniuntur actionis expertia); est autem unumquodque ens actu per formam; oportet quod operatio rei sequatur formam ipsius. Oportet ergo quod, si sint diversae formae, habeant diversas operationes. Quia vero per propriam actionem res quaelibet ad proprium finem pertingit, necesse est et proprios fines diversificari in rebus, quamvis sit finis ultimus omnibus communis.

'Sequitur etiam ex diversitate formarum diversa habitudo materiae ad res. Cum enim formae diversae sint secundum quod quaedam sunt aliis perfectiores, sunt inter eas aliquae intantum perfectae quod sunt per se subsistentes, et perfecte, ad nihil indigentes materiae fulcimento; quaedam vero per se perfecte subsistere non possunt, sed materiam pro fundamento requirunt, ut sic illud quod subsistit non sit forma tantum nec materia tantum, quae per se non est ens actu, sed compositum ex utroque' (utraque?) 'non autem possent materia et forma ad aliquid unum constituendum convenire, nisi esset aliqua proportio inter ea. Si autem proportionata oportet ea esse,

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[1] *ὅ τε γὰρ ὁρισμὸς ἀριθμός τις (διαιρετός τε γὰρ καὶ εἰς ἀδιαίρετα· οὐ γὰρ ἄπειροι οἱ λόγοι· καὶ ὁ ἀριθμὸς δὲ τοιοῦτος). καὶ ὥσπερ οὐδ' ἀπ' ἀριθμοῦ ἀφαιρεθέντος τινὸς ἢ προστεθέντος, ἐξ ὧν ὁ ἀριθμός ἐστιν, οὐκέτι ὁ αὐτὸς ἀριθμός ἐστιν ἀλλ' ἕτερος, κἂν τοὐλάχιστον ἀφαιρεθῇ ἢ προστεθῇ, οὕτως οὐδὲ ὁ ὁρισμὸς οὐδὲ τὸ τί ἦν εἶναι οὐκέτι ἔσται, ἀφαιρεθέντος τινὸς ἢ προστεθέντος. Metaph. L.* viii (*H*), *c.* 3, *v. f.*

'For definition, too, is a sort of number, (for it is divisible at once and into indivisibles, since definitions are not infinite; and number is of a similar nature). As, then, if you take away from a number any one of the elements of which the number is composed or add aught thereto, it is no longer the same, but a different number, even though the smallest subtraction or addition be made; so, in like manner, neither the definition nor the essence will remain any longer, if any subtraction or addition is made.'

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this quotation from the Angelic Doctor. First of all, taking for granted that the purpose of the Creator and, consequently, the final cause of the creation is to manifest, so far as possible, the Goodness, or Perfection, (for these are really one and the same), of the Creator; it is certain,—nay, self-evident,—that it would be impossible to accomplish such a design in any wise by the creation of a single individual or of a single species. It is impossible, because it involves a contradiction in terms. It is a contradiction in terms; because it supposes that any one finite being is capable of approximately representing the Infinite. It may perhaps be objected, that a similar contradiction is involved in the supposition that any number of finite beings, however multiplied, can approximately represent the Infinite. But the slightest consideration will suffice to show that the objection is not a very weighty one. It is undeniably true that neither the one nor the other can *adequately* represent Infinite Reality; but, if it is question of an *approximative* representation, no one can doubt but that a multiplication of specifically and individually distinct finite realities will more nearly approach, as types, the Infinite Reality than merely one or two specific natures, because more of reality is exhibited. The more you prolong a line, the nearer it gets to the representation of an infinite prolongation. The greater the number of distinct photographs we have of a neighbourhood or of some cathedral that we have not seen; the more complete will be our imagination of either. So also, the more extensive our observation of a man's actions and words under a variety of circumstances; the more likely is it *caeteris paribus* that our judgment of his character will be correct.

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necesse est quod diversis formis diversae materiae respondeant. Unde fit, ut quaedam forma requirat materiam simplicem, quaedam vero materiam compositam; et, secundum diversas formas diversam partium compositionem oportet esse congruentem ad speciem formae et operationem ipsius.

'Ex diversa autem habitudine ad materiam sequitur diversitas agentium et patientium. Cum enim agat unumquodque ratione formae, patiatur vero et moveatur ratione materiae, oportet quod illa quorum formae sunt perfectiores et minus materiales agant in illa quae sunt magis materialia et quorum formae sunt imperfectiores.

'Ex diversitate autem formarum et materiarum et agentium sequitur diversitas proprietatum et accidentium. Cum enim substantia sit causa accidentis, sicut perfectum imperfecti; oportet quod ex diversis principiis substantialibus diversa accidentia propria consequantur.

'Rursus, cum ex diversis agentibus sint diversae impressiones in patientibus, oportet quod, secundum diversa agentia, diversa sint accidentia quae ab agentibus imprimuntur.' *Cg. L.* iii, c° 97.

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Wherefore, in order that an approximative representation of the Divine Goodness might be made, which should be as complete as the respective natures of the Architype and types would permit; it was necessary that there should be specific diversities and individual varieties in created things. For He Who is Himself Infinite Essence can only be represented by finite being in parts, as it were, all which are eminently contained in His own Simplest Unity. Therefore, by how much these so-called parts are multiplied in the likeness; by so much does the likeness approximate to the Original. But the multiplication of these so-called parts amounts to nothing more or less than the multiplication of specific natures and individual variations. The process may be in some measure illustrated by that physical toy,—the chromotrope,—which consists of a circular disk on which have been represented in due order the prismatic colours. The disk is made to revolve with great velocity; and thus succeeds in offering to the eye a faint representation of white light. But one colour would not satisfy for the experiment.

An exception, however, may be taken to the above declaration, which merits consideration. It is universally admitted by the Scholastic Doctors, that superior Forms virtually or eminently include the inferior; for instance, the human soul virtually and preeminently contains the respective Forms of plant and animal. Why, then, should not one being of the highest finite excellence have been created, who would by virtual inclusion in his own nature represent all the reality actually represented by how many soever inferior Forms? Let the following suffice for a solution of the difficulty. (1) In such wise the fecundity of God would not be so explicitly represented. (2) Since the manifestation of the Divine likeness has been made for the sake of the intelligent creature, such manifestation will be evidently more complete, the more explicit it is. But Forms and faculties which are only eminently contained in any given entity could scarcely be known, save by comparison with other entities wherein the same faculties and Forms are explicitly revealed. What could we know of matter, of vegetative or animal life, from contemplation of an angel? (3) The Unity of the Creator is approximately represented in the creation by the perfectness of its order. But order is more admirable and is exhibited in greater perfection, proportionally to the multiplicity of beings comprised within it.

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NOTE.

The above argument embraces other beings than those which constitute the material universe, and will be extended to pure Intelligences in another place. Its present restriction is consonant with the subject-matter of this and the preceding Chapter.

PROPOSITION CLXXXVII.

The specific diversity to be found in material substances is essentially due to the respective substantial Forms which determine the specific nature of the composites.

DECLARATION OF THE PROPOSITION.

The present Thesis does not include the question of individual variations. The inquiry is confined for the moment to specific differences. It should further be borne in mind, that the term, *species*, is here used in a strictly metaphysical sense, as identified with the integral essence of a thing. Now, that which constitutes or determines the essential nature of an entity must be something intrinsic; for we are not dealing at present with efficient causality. Furthermore: This something intrinsic determinative of the essential nature must be either the matter or the Form; for these are the only two substantial constituents of a body. But it cannot be the matter which is common to all bodies. It must, therefore, be the substantial Form. Hence, Aristotle describes it, as we have seen, to be something 'Godlike, and good, and desirable'; and the Angelic Doctor explicitly asserts, in the concluding sentence of the first paragraph, that 'entities are diverse by reason of their having a diversity of Forms from which they acquire their specific nature.' It is unnecessary to prolong the declaration; since the whole of the present Chapter is one continuous elucidation of its truth.

COROLLARY I.

That which the substantial Form, metaphysically considered, does for the specific nature and diversity of material substances, this same Form physically and in the concrete does for the individual nature and individual variations. In the former way of conceiving it, it is regarded as the essential rather than the existing Form; in the latter, as the existing rather than the essential

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Form. Considered adequately, it is that which constitutes this individual nature in its existing specific essence.

Corollary II.

From the truth of the present Proposition it follows that all classification of material substances should be based on the substantial Forms, not on varieties of structure, colour, or other accidents only or even principally. How this can be done, since these Forms are not subject to the perception of sense, will be seen more clearly in the sequel.

Without venturing to cast a doubt on the practical usefulness of the classifications adopted by modern physicists in their respective departments, (since, for all the present writer knows, they may be the only ones which an exclusive study of physical phenomena would enable these authorities to use with safety and advantage); it may safely be permitted to question the acknowledged principles of these arrangements, which indeed must be defective, if the Proposition just declared is true. In Zoology more particularly, these principles for the most part resolve themselves into two main points, viz. *specialization of function* and *morphological type*,—to borrow the peculiar nomenclature of the day. Now, both immediately and formally belong to the material cause and its accidental organization,—the latter evidently, since it embraces what are supposed to be the fundamental points of structure; the former likewise, because it does not fasten on the operation or function itself so much, as the organic apparatus by which the function is carried out. But each of these is an effect at the best, not a cause, of specific difference; and cannot of itself be a safe guide in determining a really scientific arrangement. To this must be attributed the acknowledged uncertainty and frequent changes in our modern systems of classification. To take a striking instance:—The *Mammalia* are certainly not an unimportant Division among the Vertebrates or highest order of animals. Yet Dr. Nicholson informs us, that 'Numerous classifications of the *Mammalia* have been proposed, and it is a matter of regret that no one has been universally accepted by zoologists[1].' He contents himself with enumerating three; the first of which is determined by a vascular organ,—the *placenta*,—developed during the period of gestation. The second is based on certain

[1] *Manual of Zoology, Ch.* lxxiii, *init.*, p. 484.

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variations in the structure of the brain; the third, on variations in the female organs of reproduction. Now, it is observable that, in two out of the three proposed classifications, the distinguishing notes are limited to one sex; and the same may be said of the Division, *Mammalia*, itself. But this supposes that the two sexes must be two distinct species; for it is quite plain that neither a lion nor a tiger is *placental*. To the same source we may attribute that which is so candidly confessed by the above-quoted writer, viz. that 'No term is more difficult to define than "species," and on no point are zoologists more divided than as to what should be understood by this word. Naturalists, in fact,'—so he extends the remark beyond the limits of zoology,—'are not yet agreed as to whether the term species expresses a real and permanent distinction, or whether it is to be regarded merely as a convenient, but not immutable, abstraction, the employment of which is necessitated by the requirements of classification[1].' No wonder, then, that 'It has been doubted, apparently with considerable reason, whether the so-called *Amoebae*,' (which, nevertheless, Dr. Nicholson gives as the first Order under the *Rhizopods*,—an Order in this system of classification being a much more extended whole than a Species), 'are distinct species of animals, or whether they are not rather transitory stages in the life-history of other organisms. It is quite certain that several of the *Protozoa* pass through an Amoeboid stage, and it is also certain that vegetable matter not uncommonly assumes similar characters (e.g. the mycelium of certain fungi). It is therefore not impossible that the forms known to the microscopist as *Amoebae* may be ultimately discovered not to be permanent and distinct species[2];'—that is to say, it is confessedly uncertain whether an entire Order ranged in a manual of Zoology under a distinct Class are independent and stable animals or only 'transitory stages in the life-history of other organisms.' Again, of another Order under the Sub-kingdom of the *Coelenterates* the same author makes a similar avowal. 'From the above description,' he writes, 'it will be evident that the *Medusa* is in all essential respects identical in structure with the free-swimming generative bud or gonophore of many of the fixed and oceanic Hydrozoa. Indeed, a great many Forms which were previously included in the *Medusidae* have now been proved to be really

[1] *Manual of Zoology, General Introduction, n. 9, p. 19.*
[2] *Ibid. Ch.* ii, *p.* 49.

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of this nature, and it may fairly be doubted if this will not ultimately be found to apply to all[1],'—that is to say, that they are not an Order at all, but generative offshoots of other Orders of *Hydrozoa;* consequently, that the Sub-class of the *Discophora*, which exclusively consists of this one Order, may be safely eliminated from the Table of classification. Mr. Darwin is another who adds his warning touching the vague and uncertain sense which physicists attribute to the term, *species*. 'It is all-important to remember,'—these are his words,—'that naturalists have no golden rule by which to distinguish *species* and varieties; they grant some little variability to each species, but when they meet with a somewhat greater amount of difference between any two forms,' (that is to say, accidental forms,—for instance, shapes, structures, deviations in organism of whatsoever kind), 'they rank both as species, unless they are enabled to connect them together by close intermediate gradations[2].' This honest confession excuses a paralogism which is latent in the whole of this writer's popular Work on *The Origin of Species*. Yet, it is somewhat misleading. The reader is told that the author understands by the term, *species*, a more marked variety. He is encouraged in his belief that such is the accepted meaning of the word by its perpetual correlation throughout the volume with cognate terms commonly adopted in modern Zoology,—genera, families, classes, etc.[3];—and probably finds little or no difficulty in admitting that the hypothesis of natural evolution has some considerable amount of truth in it, whatsoever the exaggerations with which, naturally enough, it is surrounded. But in the final Chapter he finds to his dismay, that the term *species* embraces genera, families, orders, classes,—nay, sub-kingdoms themselves[4]. It is surely, then, not without abundant reason that, at the commencement of the declaration of this Thesis, the reader should have been admonished of the definite sense which the said term is here intended to bear.

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[1] *Manual of Zoology, Ch.* x, *p.* 97.
[2] *Origin of Species, Ch.* ix, *p.* 297, 1st *Edition*, 1860.
[3] *Ibid. Ch.* viii, *p.* 261; ix, *p.* 281; ix, *pp.* 297, 302, 307.
[4] *Ibid. Ch.* xiv, *p.* 484.

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PROPOSITION CLXXXVIII.

From the diversity of substantial Forms, considered in their relation to the final cause of material substances, there necessarily flows a cosmic order.

Prolegomenon.

Order in its generic signification may be defined to be the disposition or reduction of distinct entities under unity. In order there is a material and a formal part. The material part are the distinct entities themselves; the formal part is their unity. In *real* order three things are included; viz. real entities really distinct, a real union of some kind, and a principiant to which these distinct entities are referrible as source of their union. It is a consequent property, that there should be an inequality among the ordered entities. The faculties of the human soul, for instance, are real entities and really distinct. There is an inequality of excellence among them; and they are one in subordination to the intellect which is the essential characteristic of the human soul. Cosmic order, in like manner, supposes real material substances really distinct, an inequality in the excellence of their respective natures, and the Divine Perfection as the Principiant of order, to Which all created things are referrible as the measure of their mutual relation and subordination.

Declaration of the Proposition.

All order, whether conceptual or real, is measured by some principiant. For all order supposes a more and less of some sort,—that is to say, in finite being,—and real order, a real more or less. Such *more or less* must be determined according to a common measure. Thus,—to take an illustration from geometry,—the principiant of a line is a point; consequently, all the virtual elements of the line are more or less in order of position, according to their nearness to, or distance from, the initial point. Now, the principiants of nature are four, viz. the four causes; consequently, the natural order will be measured by the four causes. But of these, three, (as the Angelic Doctor observes[1]), coincide as principiants of order. For the Divine Perfection operating is the

[1] *Quol. L.* v, *a.* 19, *c.*

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Efficient Cause; a partial likeness to, and similitudinal participation of, the Divine Perfection, the Formal Cause; and an approximative representation of the Divine Perfection, the final cause. Hence, the Divine Perfection is measure in each and all; for the material cause, as undifferential, may be eliminated.

Now, it has been shown in the two preceding Propositions, how that a specific diversity in material substances was rendered necessary by the fact that the final cause of the visible universe is a manifestation of the Divine Perfection, or Goodness; and, secondly, that this diversity is determined by the substantial Forms which constitute the essential nature of the material composite. But this specific diversity, as measured objectively by the Divine Perfection, can only arise from the existence in material substances of a nearer or more remote likeness to their Exemplar,—the Divine Goodness. Wherefore, there exist all the elements of a real order.

Again:—to put the same argument in a somewhat different way,—'We may consider in entities,' observes St. Thomas, 'a twofold order; the one, accordingly as they issue forth from a principiant; the other, accordingly as they are ordained to an end[1].' Now, the things of nature issue forth from the Divine Perfection as their Exemplar and Efficient Cause; and they are ordained to the manifestation of the Divine Perfection as their Final Cause, each according to its measure,—the whole collectively according to the predetermined measure of manifestation[2]. Hence arises the more or less of similitude to the exemplar in each, as has been already explained; and, as a consequence, the presence of order.

Once more: There is an absolute, and there is an accidental, order in material substances[3]. The absolute order is discoverable in the specific differences existing among material substances.

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[1] 'In rebus potest considerari duplex ordo: unus secundum quod egrediuntur a principio; alius secundum quod ordinantur ad finem.' *Verit. Q.* v, *a.* 1, 9[m].

[2] *Spiritu. a.* 8, *c.*

[3] 'Manifestum est autem quod in omnibus individuis unius speciei non est ordo nisi secundum accidens: conveniunt enim in natura, et differunt secundum principia individuantia, et diversa accidentia, quae per accidens se habent ad naturam speciei.' Such are diversity of colour, modifications in the specific structure, etc. 'Quae autem specie differunt, ordinem habent per se et secundum essentialia principia. Invenitur enim in speciebus rerum una abundare super aliam, sicut et in speciebus numerorum, ut dicitur in 8 Metaph. In istis autem inferioribus, quae sunt generabilia et corruptibilia, et infima pars universi, et minus participant de ordine, invenitur non omnia diversa habere ordinem per se; sed quaedam habent ordinem per accidens tantum, sicut individua unius speciei.' *Spiritu. a.* 8, *c. p. m.*

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The accidental order is to be seen in the individual differences, or variations, existing within the same species; for here likewise there is a *more or less* as measured by a common type. Nevertheless, such order is justly called accidental; because the greater or less is not discoverable in the essential nature but in the individualizing accidents.

Since, then, there is an essential order in material substances; the substantial Form, which is the intrinsic principle of the essential nature of each and, in consequence, of the diversity, must likewise be the intrinsic principle of the cosmic order.

PROPOSITION CLXXXIX.

From a diversity of substantial Forms there follows a diversity of natural operations.

Prolegomenon I.

By *natural operation* is to be understood the operation which is proper to, and characteristic of, the nature of a thing. Now, nature and essence, as has been noticed in the first Book, are objectively one and the same, though conceptually distinguished. *Essence* expresses the Being of a thing absolutely, as it is in its first act of being; whereas *nature* represents the essence in its transcendental relation to its second act,—that is to say, to its proper operation. Hence, the latter is defined to be the principiant of that operation by which each entity tends to its appointed end. Consequently, the natural operation of a thing is its essential operation, or that operation which properly flows from its essence. As such, it includes immanent as well as transient action,—that is to say, action whose term is intrinsic in the agent as well as action whose term is extrinsic to the agent. Thought, will, sensation, are instances of the former; generation, operations of art, are instances of the latter. Natural operation is not confined, in its full meaning, to one act, but includes the whole series of actions that conspire to the attainment of the constituted end. Thus, for instance, the growth of a plant from first to last is its natural operation.

Prolegomenon II.

It follows as an evident Corollary from the doctrine contained in the previous Prolegomenon, that 'The manner of operation of

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every single thing whatsoever follows the manner of its Being[1].' Hence, the essence of a material substance, though of itself not subject to human perception *immediately* in the present order of cognition, is cognizable by means of its natural operation. Accordingly, the Angelic Doctor remarks, that 'When any particular operation is proper to an agent; then, by that particular operation, proof is given of the entire efficacy of the agent[2].' Of course, such cognition of the essence becomes less easy, in proportion as the entity is lower in the scale of material substances and its natural operation, in consequence, less intelligible because of its captivity under matter.

Prolegomenon III.

As the principiant of natural operation is one only, and the final cause in which such operation finds its consummation is likewise one; the natural operation itself, as proceeding from the one and essentially tending towards the other, is likewise specifically one. 'Natural operation,' says St. Thomas, 'is always terminated to some one thing; just as it proceeds from one principiant which is the Form of the natural entity[3].' Since, then, operation receives specification from its term and essential unity from its principiant, it follows that the operation itself is in the same manner one.

Prolegomenon IV.

Natural operation, considered as complete in its term, is the ultimate perfection of the agent. Hence, 'Everything evidently exists for the sake of its operation; for operation is the ultimate perfection of a thing[4];' as it is 'the ultimate act of him who operates[5].'

Prolegomenon V.

Natural operation is attributed to a twofold principiant, but

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[1] 'Modus operandi uniuscujusque rei sequitur modum essendi ipsius.' 1ae lxxxix, 1, *c*, *init.*

[2] 'Quando aliquod particulare opus proprium est alicujus agentis, tunc per illud particulare opus probatur tota virtus agentis.' 3ae xliii, 4, 3m.

[3] 'Operatio autem naturalis semper terminatur ad aliquid unum, sicut et procedit ab uno principio, quod est forma rei naturalis.' 2-2ae xcv, 5, *c. p. m.*

[4] 'Omnis enim res propter suam operationem esse videtur; operatio enim est ultima perfectio rei.' *Cg. L. III*, c° 113.

[5] 'Manifestum est autem, quod operatio est ultimus actus operantis.' 1-2ae iii, 2, *c.*

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differently. It is assigned to the supposit or person; and it is assigned to the nature or essence or faculty of such essence. The former is called by the School the *principium quod*, or, the principiant which operates; the latter is called the *principium quo*, or the principiant by virtue of which the agent operates. Thus, for instance, it is Charles,—we will say,—who thinks. He is the *principium quod*. But it is by his intellectual nature or faculty that Charles thinks; and this is the *principium quo*. Hence St. Thomas remarks that 'Though operation is attributed to the hypostasis' (person or supposit) 'as operating; nevertheless, it is attributed to the nature as to the principiant of operation[1].' This distinction will be better understood, when the fitting occasion offers for entering upon the question touching the nature of *supposit* and *person*.

Declaration of the Proposition.

The doctrine evolved in the above Prolegomena renders the proof of the Enunciation easy, and obviates the necessity of elaboration. The natural operation of an entity proceeds from its specific nature. But the specific nature of an entity is determined and constituted by its substantial Form. Therefore, the natural operation of an entity proceeds from its substantial Form. If, then, there exists a diversity of Forms; there must likewise exist a diversity of operations. Accordingly, we are told by St. Thomas, that 'The species of the operation follows the species of the Form which is the principiant of operation[2].' Wherefore, though 'Operation belongs to the subsisting supposit, yet according to the Form or nature from which operation receives its species. For this reason, from a diversity of Forms or natures there is a specific difference of operations[3].' Since the operation follows the nature of the Form; so must likewise the potentiality which is proximate principiant of operation. Of this, too, we are certified by St. Thomas. 'The active potentiality of whatsoever entity,' he writes, 'follows its Form which is the principiant of action. Now,

[1] 'Quamvis operatio attribuatur hypostasi ut operanti, tamen attribuitur naturae ut operationis principio.' *Verit. Q.* xx, *a.* 1, 2[m].

[2] 'Species operationis consequitur speciem formae quae est operationis principium.' *Anima, a.* 2, 7[m].

[3] 'Operari est hypostasis subsistentis, sed secundum formam et naturam a qua operatio speciem recipit. Et ideo a diversitate formarum seu naturarum est diversa species operationum.' 3[ae] xix, 1, 3[m].

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the Form is either the nature itself of the entity, as in simple entities; or it is that which constitutes the nature itself of the entity, as in the instance of those entities which are composed of matter and Form. Hence it is plain that the active potentiality of whatsoever entity follows the nature of that entity[1].'

COROLLARY.

In the instance of every created entity, its substantial Form, either in act or actuating, is its first perfection; its complete operation, its second and ultimate perfection. For the first perfection of a thing is *to be* and to be, consequently, in its own specific nature; its ultimate perfection is to attain the final cause of its natural operation, since in this consists its consummation and happiness.

PROPOSITION CXC.

Diversity in the substantial Forms postulates a parallel diversity in the material cause.

DECLARATION OF THE PROPOSITION.

As we have seen, primordial matter of itself is indifferent to all Forms. Hence, though as a pure passive potentiality requiring reduction to act in order to exist, it has an essential inclination towards Form in general; nevertheless, it has no preference for one Form over another. Unless, therefore, this potentiality were in such sort modified as to direct its evolution in a definite direction, there would be no sufficient reason why it should be actuated by one Form rather than another. In fact, one modification it must receive in order to its actuation by any whatsoever Form in the constituted order. It must be portioned off, and to this end it must be modified by quantity; since no single Form exhausts the whole potentiality of matter. Hence, as the Angelic Doctor teaches and as has been elsewhere stated on his authority, quantity is the essential concomitant of the Body-Form which is, as it were, the primary determination of matter, and is virtually included in every material substantial Form. But, over and above this,

[1] 'Potentia autem activa cujuslibet rei sequitur formam ipsius, quae est principium agendi. Forma autem vel est ipsa natura rei, sicut in simplicibus; vel est constituens ipsam rei naturam, in his scilicet quae sunt composita ex materia et forma. Unde manifestum est quod potentia activa cujuslibet rei consequitur naturam ipsius.' 3^a^ xiii, 1, *c.*

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matter must be inclined for the reception of each particular Form; so that the evolution of such Form may naturally follow upon the special cravings of the matter. This preparation is effected by certain dispositions given to the matter as proximately susceptive of the particular Form. In the instance of the elements which were created in the beginning, those dispositions were concreated with the creation of each element; but in natural generation these dispositions precede the eduction of the Form even in order of time. This is one reason why generation necessitates a previous corruption. By the action of the efficient cause certain qualities are introduced into the matter, which dispose the latter for the reception of the new Form, but render it proportionately disaffected towards the primitive Form; till at length the former is educed and the latter expelled. A curious illustration of this process may be seen in a fact of daily experience. If a piece of paper is thrown on a dull fire where it is not exposed to the more vehement action of a flame, it will gradually change colour and shrivel, but retain its own nature; so that it is often a considerable time before it catches fire and is transformed. The introduction of the necessary dispositions for receiving the Fire-Form in this case takes an appreciable time; because of a defect either in the efficient cause or in the due proximity of the Subject.

Now, since there is a diversity of Forms and a consequent diversity of natural operations, it follows that, in proportion to the number of different Forms, there must be a corresponding number of special dispositions in the matter; for those which are proportionate to one species must necessarily be disproportioned to another. Hence arises specific composition or specific organization according to the specific nature of the entity. Further: Since within the same species one may be more perfect than another, so that in consonance with the cosmic order there is a continuous gradation from the lowest up to those which are highest and nearest the immediately superior species, and since it is absolutely requisite that a due proportion should exist between the matter and the Form in order that the latter may be free to energize according to its natural operation; it follows that there must be a variety in the structure and organism of matter to correspond with the various species and with variations under the same species. Furthermore: The higher the Form, the more complex and perfect will be the structure of the matter. Such is the teaching of

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St. Thomas, who clearly lays down the same doctrine at the end of the fourth paragraph of the fundamental passage quoted in the *hundred and eighty-sixth* Proposition. 'Matter and Form,' he there observes, 'could not unite to constitute any one given entity, unless there were some sort of proportion between them. But, if they must be proportioned, there must be a diversity of matter to correspond with a diversity of Form. Hence it comes to pass, that one Form postulates incomposite, and another composite, matter; and according to the diversity of Forms a difference in the composition,' or organization, 'of the parts is rendered necessary in accordance with the specific nature of the Form and the operation of the same.' The natural operation, indeed, has much to say to it; since the Form operates through the bodily organs.

There is one observation of the Angelic Doctor in the earlier part of the same paragraph, which requires our special notice; for without it the declaration of the present Proposition would not be complete. There is not only a proportion between matter and its Form in the constitution of each material substance; but there is a diversity in the transcendental relation of matter to different specific Forms. In some material substances the Form is wholly dependent upon the matter, even for its subsistence; while in others, the Form, though act of the body, has a subsistence of its own apart from matter. Again: Even among those Forms that are wholly dependent upon matter for their subsistence, some,—as those, for instance, of inanimate substances,—are entirely immersed in matter; while others, like those of some higher orders of animals,—have a certain sort of elevation above matter, as is clear from their natural operations. In the former class, as well as in the second division of the latter class, the correspondence of the matter with the Form cannot be so adequate as in the instance of those Forms which,—to repeat the pregnant phrase of St. Thomas,—are wholly immersed in matter.

PROPOSITION CXCI.

From the diversity of substantial Forms there follows a diversity in the properties and accidents of the composite substance.

Declaration of the Proposition.

From the specific diversity of substantial Forms there must necessarily flow a diversity in the properties of the composite

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substance; while from the individual diversity of Forms under the same species there arises, in the constituted order, a diversity in the accidents of the composite substance. Let us consider these two statements separately.

i. The specific diversity of the substantial Forms necessarily causes a corresponding diversity in the properties of the composite substances. For what is a property? A property, according to the metaphysical concept of it, is an entity that forms no part of the essence of the Subject to which it belongs, but is essential to it or, in other words, flows from the essence. Hence, the concept of it is partly negative, partly positive. As negative, it reveals a real minor distinction between the integral substance,—that is to say, the matter actuated by its substantial Form,—and the property. As positive, it exhibits a real distinction between property and accident specifically so called; in that the former flows from the essence of the Subject, while the latter does not. If we consider the two terms according to their logical import, we arrive at a similar conclusion. Treated metaphysically, the measure is the whole of comprehension; logically, the whole of extension. Logically considered, then, a property is an accident which belongs always to all and each of the individuals comprised under a generic or specific whole. If the whole is generic, the property will be generic; if specific, the property will be specific. A pure accident, on the other hand, either does not belong to all and each of a given whole, but to some only; or, if perchance to all and each, yet not constantly. Therefore, it cannot flow from the Form as determinative of the species. If, then, a property flows from the essence of that substance whose property it is, it must flow from the substantial Form; because the species, as we have seen, is determined by the Form. That properties, generic as well as specific, are discoverable in inanimate bodies, is patent to any one who consults the pharmacopoeia. The cathartic property of *croton-oil*, *aloes*, *castor-oil*, certain *salts of mercury*,—the diaphoretic, or sudorific, property of *antimony* and *ipecacuanha*,—the narcotic property of *morphia* and *tobacco*, are instances of properties which are generic, because they belong to more than one species. Take, for instance, *croton-oil* and *mercury*, *ipecacuanha* and *antimony;* in each of these couples the first is a vegetable, the second a metal. To leave the pharmacopoeia: Instances of specific properties in inanimate bodies are, the magnetic property of the *lode-stone*,—the

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intimate and necessary connection of *oxygen* with life in material substances,—the relative lightness of *hydrogen*, which causes it to be chosen as unity of measure among the ponderables. In animal life *organization* is a generic property, because it is common to plants as well as animals; *sense of touch*,—and the same may be said of the other *senses*,—is a specific property. In man *respiration* and the *vertebrate structure* are generic properties; *true laughter* is a specific property. It is plain, that the properties of bodies in act are subject to sensile perception; whereas the substantial Form is not.

ii. From a diversity of substantial Forms there follows a diversity of accidents properly so called,—that is to say, of accidents which do not flow from the essence of their Subject. But herein there is an apparent difficulty. For if these accidents do not follow upon the essence of their Subject; whence arises any necessity for a diversity of accidents, because there is a diversity of substantial Forms? It is true, then, that there is no connection between the accident and the substantial Form *as determinative of the species;* but there is a close connection between the accident and the substantial Form as act of *this* matter and constitutive of *this* individual substance. Under this respect, there is a twofold connection between the two. First, forasmuch as an accidental Form informs the whole substantial composite whose constitution it presupposes; it consequently presupposes the substantial Form and, if natural, must be compatible,—nay, congenial,—with the latter. Secondly, an accident may be associated with the substantial Form by external agency. Hence it is plain that there are two classes of these accidents. The first class originates from some cause intrinsic to the Subject informed; the second class, from some extrinsic cause. Let us consider the two separately.

a. Some accidents may arise from a peculiar disposition of the matter in the evolution of the substantial Form. This in all probability accounts for the allotropic states detected in inanimate bodies. But accidents of this nature occur more frequently in living bodies by reason of their generation. The qualities which are the instruments (so to speak) of the generating agent contain potentially, or act by virtue of, the substantial Form of the agent, not only as being a Form of such a determinate species, but likewise as individual act of *this* determined body with its accidents. Consequently, they are apt to transmit special accidents from the generating to the generated. Hence, the principle of *heredity* (as

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it has been barbarously denominated) is at once a cause of unity and of distinction,—of specific identity and of particular variations. It is in this way that one can account for hereditary diseases,—for the transmission of natural propensities from parent to offspring,—for peculiarities of size, feature, colour, quality of hair, etc. in a family, —for length, shape, or absence of horns in a breed,—and so on. The connection of such accidents with the substantial Form is more plain, though indirect.

b. There are likewise accidents which arise from an extrinsic cause and are, as it were, imposed upon the composite substance. There is an apt and very interesting illustration of this in inanimate bodies, given in a quotation made by Professor Mivart from Mr. Murphy's work on *Habit and Intelligence*. 'Mr. Murphy says "Crystalline formation is also dependent in a very remarkable way on the medium in which it takes place." "Beudant has found that common salt crystallizing from pure water forms cubes, but if the water contains a little boracic acid, the angles of the cubes are truncated. And the Rev. E. Craig has found that carbonate of copper, crystallizing from a solution containing sulphuric acid, forms hexagonal tubular prisms; but if a little ammonia is added, the form changes to that of a long rectangular prism, with secondary planes in the angles. If a little more ammonia is added, several varieties of rhombic octahedra appear; if a little nitric acid is added, the rectangular prism appears again. The changes take place not by the addition of new crystals, but by changing the growth of the original ones[1]."' Now, crystallization is evidently enough a generic property of certain bodies; and it would almost seem as though the form of crystallization were in many cases specifically determined. The writer has been told by a competent authority, that there are distinct families of these forms; and that the forms of substances which, like sulphur and carbonate of lime, crystallize variously, are reducible under one family on a geometrical basis. However this may be, in the instances cited the medium in which the crystallization took place seems to have imposed an accidental modification of the crystallic forms; and a successive alteration in the medium, a parallel alteration in those forms. Accidents of the same class are, as it were, forced upon living bodies by climate and geographical distribution.

[1] *Mivart's Genesis of Species, Ch. V, p.* 114.

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Mr. Darwin, in his work on *Animals and Plants under Domestication*, supplies us with some very curious instances of this. 'Climate,' he assures us, 'definitely influences the hairy covering of animals; in the West Indies a great change is produced in the fleece of sheep, in about three generations. Dr. Falconer states that the Thibet mastiff and goat, when brought down from the Himalaya to Kashmir, lose their fine wool.' 'Burnes states positively that the Karakool sheep lose their peculiar black curled fleeces when removed into any other country.' But he adds, further on, the following yet more striking instance. 'With respect to the common oyster,' he writes, 'Mr. F. Buckland informs me that he can generally distinguish the shells from different districts; young oysters brought from Wales and laid down in bed where "*natives*" are indigenous, in the short space of two months begin to assume the "native" character. M. Costa has recorded a much more remarkable case of the same nature, namely, that young shells taken from the shores of England and placed in the Mediterranean, at once altered their manner of growth and formed prominent diverging rays, like those on the shells of the proper Mediterranean oyster[1].' We may presume, therefore, that the shells were not uninhabited.

Similar accidents are produced in an appreciable manner by food. The disposition of a dog may be entirely changed by substituting for its daily diet raw meat in the place of biscuits. Mr. Darwin again supplies us with valuable instances on this head. 'The nature of the food,' he writes, 'sometimes either definitely induces certain peculiarities, or stands in some close relation with them. Pallas long ago asserted that the fat-tailed sheep of Siberia degenerated and lost their enormous tails when removed from certain saline pastures; and recently Erman states that this occurs with the Kirgisian sheep when brought to Orenburgh. It is well known that hemp-seed causes bullfinches and certain other birds to become black. Mr. Wallace has communicated to me some much more remarkable facts of the same nature. The natives of the Amazonian region feed the common green parrot with the fat of large Siluroid fishes, and the birds thus treated become beautifully variegated with red and yellow feathers.' Later on, he adds, 'Lastly, it is well known that caterpillars fed on different food

[1] *Ch.* xxiii, *Vol. II, pp.* 278, 280.

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sometimes either themselves acquire a different colour or produce moths different in colour[1].'

Such accidents are also caused by direct human interference; to which we may refer many of the phenomena that are related under the head of *domestication*. Mr. Darwin is again our authority for the following statement. 'There can be little doubt that our domesticated animals have been modified, independently of the increased or lessened use of parts, by the conditions to which they have been subjected, without the aid of selection. For instance, Prof. Rütimeyer shows that the bones of all domesticated quadrupeds can be distinguished from those of wild animals by the state of their surface and general appearance[2].'

Finally: Another cause of such accidents as are produced by an agency extrinsic to the Subject, in the instance of animals, is the effect of vivid sensile impressions during the time of breeding. That this cause operates even in human generation, especially when such impressions are startling and unexpected or abnormal, is a well known fact; and it is likely to be much more active in the case of irrational animals, whose actual present sensations would be more masterful, because they have no self-consciousness or other intellectual activity to prevent them from being for the time entirely possessed by the former. They exclusively live in the sensile impressions of the moment. May we not fairly attribute to this cause the curious instances of imitation which are to be found in the family of the Phasmidae, and among the Lepidoptera, —the leaf-butterfly, for instance? It is recorded of Jacob, that he caused a variation in colour among his flock of sheep, by taking advantage of this cause[3].

It is difficult to see how a diversity of substantial Forms can produce a diversity in accidents of this kind, or even postulate such diversity. There is thus much of connection, however, between these accidents and the substantial Form as actuating the individual body, that the former could not find admittance within the living body, unless they were at least compatible with the latter. No operation of secondary external causes could impart a digestive organism to a diamond or transform the body of an elephant into

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[1] *Ch.* xxiii, *Vol. II, pp.* 279, 280.
[2] *Ibid. p.* 279.
[3] *Genesis* xxx, 31–42.

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the segmentary structure of an arthropod. But they may suffice to introduce notable variations in a species, more particularly when transmitted by hereditary descent.

Corollary.

The last three Propositions afford a practical answer to the problem suggested in the second Corollary to the *hundred and eighty-seventh* Thesis. In that Corollary it is concluded, that a true classification of material substances—in particular, of living bodies—must be based on the nature and diversities of their substantial Forms. But the difficulty is at the same time proposed, that these Forms, like the matter, are not subject to the perception of the senses; how then can we make use of them for purposes of classification? Is there any way in which they reveal themselves to human cognition? The answer is now evident. The substantial Form of a material substance reveals itself to sensile perception and becomes consequently object of cognition, in four different ways: by its natural operation; by its generic and specific properties; in particular, by its bodily composition or organization; lastly, by its natural accidents. Let us consider each one of these apart, in order to see whether we may not be able to get at certain practical rules to guide us in classification; premising that the revelations proceeding from these four sources are unequal in their evidence, and that in this respect they follow the order just indicated.

i. First in order of certainty comes the natural operation of a material substance,—that native energy by which it pursues in act and attains its appointed end. In living things, (and to the consideration of these the present Corollary is intentionally restricted), this natural operation will, of course, differ according to the different kinds of life,—i. e. of substantial Forms,—which manifest themselves in these operations. In plants it is limited to growth, nutrition, reproduction; in animals, besides these just named which they share with plants, there are to be found sensation, imagination, instinct, habits, and in certain higher orders of animals, obumbrations of intellect and will. In man, over and above all these which he shares in common with plants and animals, there are the purely spiritual acts of intellect and will, made known to us by language spoken and written, and in many other ways.

The Angelic Doctor remarks that the first and most rudi-

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mentary sense in animals is that of touch. If this, therefore, is present, we may be sure that the living thing is an animal, not a plant; even should the other senses be wanting.

ii. Next to the natural operations, the generic and specific properties most clearly reveal the nature of the substantial Form; because, though no part of the essence, they flow from it and invariably accompany it. Thus, for instance, that a plant is dioecious, monoecious, or hermaphrodite,—that it is terrestrial, aquatic, marine,—that it is exogenous, or endogenous,—that it is evergreen or deciduous,—all these properties seem to be of higher importance, and to reveal more about the nature and substantial Form of a plant, than the mere number of its stamina, or the composition of its corolla. So, again, man's capacity for laughter is a more certain indication of his specific nature than his possession of a vertebral column or the fact that he has two hands.

iii. Inferior to the two former, but still of considerable service in helping to the discovery of the specific nature of a plant or animal, are the material structure and organism, which are foremost among the natural accidents. These are chiefly useful in enabling us to determine more easily the natural operation and properties of the entity. Thus, for instance, the baleen-plates, the fins, the spiracles, of the whale seem to reveal more of the specific nature of the animal, of its essentially oceanic life, than its possession of mammary glands or of some hairs upon its skin; consequently, the former characteristics of the cetacea are naturally of much higher value in a really scientific classification than the latter. On the other hand, a division which is based on the form and proximity of the nostrils and on dental formulae,—such as that of the quadrumana into strepsirhina (or twisted nostrils), platyrhina (or wide-set nostrils), and catarhina (or oblique and near-set nostrils), is trivial and unscientific. For the above reasons, organization is of much higher value than mere structure; for the former is more intimately connected with natural operation. This observation particularly applies to the organs of sense. Professor Haeckel, in calling attention to the two primary germ-layers, constituted subsequently to the egg-cleavage, tells us, it may be remembered, that the outer layer (or ectoderm) 'gives rise to the *animal* organs of sensation and movement, the skin, the nerves, and the muscles;' while from the inner layer (or endoderm) 'the *vegetative* organs of nourishment and reproduction, the intestine and blood-vessel system in parti-

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cular, arise[1].' Yet, strange to say, it is prominently from these latter, and from the inferior parts of these latter, that modern classification has borrowed its principles of differentiation; and not from the development of the exoderm which is the specific source of animal organism. Let it be permitted to illustrate the remark here made by an example. Those who have studied modern books on comparative anatomy as well as on the theory of evolution must have had their attention repeatedly called to a fish that has lately gained for itself a great, though perhaps unmerited, reputation. This fish is the *amphioxus*, or *lancelet*, (so called from its lanceolate shape),—a species of lamprey that lives buried in sandbanks. This animal is skull-less,—has no formed brain,—no organ of hearing, only rudimentary eyes, (if they can be called such), a very doubtful organ of smell,—has no distinct heart or developed system of circulation,—no lymphatic system,—no skeleton,—imperfect organs of reproduction; yet, according to the classification now in vogue, this, one of the lowest forms of integral animal life, finds a place,—above ants, termites, bees, trap-door spiders,—in the highest of the constituted Sub-kingdoms, because it possesses a notochord, the supposed rudiment of a vertebral column. Professor Haeckel justifies this strange appointing in words strikingly illustrative of the matter in hand. He tells us, that in 'the History of Evolution' and in comparative anatomy, 'the head with the skull and the brain are non-essential, as are also the extremities, or limbs. It is true that these parts of the body possess a very high—even the very highest *physiological* importance; but for a *morphological* conception of the Vertebrate, they are non-essential, because they appear only in the higher Vertebrata, and are wanting in the lower,'—that is, so far as skull and brain are concerned, in the *Lancelet alone*, and in no other. 'The lowest Vertebrates possess neither a clearly marked head with a brain and skull, nor extremities, nor limbs. . . . This single lowest Vertebrate, *which deserves the closest consideration, and, next to Man, must undoubtedly be called the most interesting of all Vertebrates*, is the well-known Lancelet, or Amphioxus[2].'

Now, any classification which is *exclusively* derived from matter must be necessarily deficient and exposed to error for three principal

[1] *Evolution of Man, Ch.* viii, *Vol. I, p.* 196. The italics in this and the following quotation have been introduced. They are not in the original.

[2] *Ibid. Ch.* ix, *Vol. I, p.* 253.

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reasons. First of all, some substantial Forms rise above the matter or bodily structure in their essence; others after a manner, as has been pointed out in the last paragraph of the *hundred and ninetieth* Proposition. In such cases the structure,—and even organization,—of the body would give but a very imperfect and partial knowledge of the specific nature. Then, again, there may be modifications of bodily structure and organism, which are either individual, as in the lancelet, or particular,—that is to say, common to a group under the same species, such as the abdominal pouch of the marsupials. These variations may be considerable, and the study of them always interesting; but they do not form any part of the specific nature. Thirdly, similar variations may be purely accidental, and arising from extrinsic causes; but these have no direct connection with the specific nature. Yet Dr. Nicholson tells us, that 'Philosophical classification is a formal expression of the facts and laws of Morphology and Physiology,'—terms not happily chosen, but which the author explains to mean, that 'It depends upon a due appreciation of what constitute the true points of difference and likeness amongst animals, and we have already said that these are morphological type and specialisation of function [1],'—the structure and organism of bodies, in plain language. The pages that immediately follow are a sorrowful comment on these philosophical claims.

It is plainly deducible from the above animadversions, that in animals the organism is much more closely connected with, and indicative of, the Form and specific nature than is the structure. Of organisms the most important are the organs of sense and all else that pertains to the nervous system.

iv. From what has been already said it is sufficiently plain, that accidents may be useful in enabling us to signalize variations and to distinguish with greater accuracy between these and true species, but have no place in classification of species. Of such are colour, more or less covering of hair, possession and size and shape of horns, make of the nose, number and position of fins, etc.

PROPOSITION CXCII.

Within the periphery of the entire cosmic order there are four primary gradations of substantial bodily Forms. In the lowest grade are such as constitute inanimate, in the second

[1] *Manual of Zoology, General Introduction, n. 9, p. 18. See pp. 19–23.*

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such as constitute vegetable, in the third such as constitute animal, substances. The fourth and highest grade embraces the created soul of man.

Since this Proposition has been allowed a place in the present series as introductory to those which are about to follow, yet mainly in order that the doctrine of the Angelic Doctor touching the subject-matter of this Article may be fully exposed; a statement of St. Thomas shall supply the place of a declaration. The following are his words: 'Although the being of Form and matter is one,' since they co-exist in the composite; 'nevertheless, it is not necessary that the matter should be on a par with the Form in being. On the contrary, by how much the Form is nobler, by so much does it always surpass matter in its being. This is plain to any one that examines into the operations of Forms, from the consideration of which we get to know the nature of the Forms; since everything operates according to its being. Hence, a Form whose operation exceeds all material conditions, itself too, in proportion to the dignity of its being, superexceeds matter. For we find certain lowest Forms which are capable of no operation, save that to which those qualities attain which are dispositions of matter; such as hot, cold, wet, dry, rarified, dense, heavy, light, and the like. Such are the Forms of the elements.' It should be noted that the particular qualities here enumerated have a special connection with the elements supposed to be such according to the physics of the time; but this does not in any wise affect the truth of the distinction. With another list of qualities which, in accordance with its supposed elements, modern chemistry could supply, this observation of the Angelic Doctor would hold equally good. St. Thomas continues: 'Hence, these are Forms altogether material, and totally immersed in matter. Above these we find the Forms of mixed' (chemically combined) 'bodies, which, albeit they do not extend to any operations that cannot be effected by virtue of the aforesaid qualities, nevertheless sometimes operate these effects by a higher bodily virtue. . . . Above these, again, we discover some Forms whose operations are extended to certain effects that exceed the virtue of the aforesaid qualities; though the aforesaid organic qualities assist in the operations of these Forms. Such are the souls of plants, which are assimilated not only to the powers of the heavenly bodies by their surpassing the active and passive qualities' of the elements, 'but are assimilated even to those who impart to

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the heavenly bodies their respective motions, in so far as they are principiants of motion to living entities whose motion is from themselves. Above these Forms we find other Forms similar to higher substances not only in power of motion, but also after a certain sort of a way in power of cognition; and thus they are competent for operations, in regard of which the aforesaid organic qualities are not even serviceable, although such operations are not accomplished save through the medium of a bodily organ. Such are the souls of brute animals. For sensation and imagination are not accomplished by getting hot and cold, although those may be necessary to the due disposition of the organ. Again: Above all these Forms we find a Form similar to the superior Substances, even as regards the kind of cognition which is intelligence, and so is competent for an operation that is accomplished altogether without a bodily organ. This is the intellectual soul' of man; 'for intellectual cognition is not elicited by a bodily organ. Hence, it is of necessity that this principiant of human thought, which is the intellectual soul and transcends the condition of bodily matter, should not be entirely encompassed by matter or immersed in it, as other material Forms are. Its intellectual operation evinces this, since with it bodily matter has nothing in common. Forasmuch, however, as this same intelligence of the human soul stands in need of other faculties which operate by means of certain bodily organs, —that is to say, imagination and the senses; this fact shows that it is naturally united to the body in order to complete the specific nature of man[1].'

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[1] 'Quamvis autem sit unum esse formae et materiae, non tamen oportet quod materia semper adaequet esse fo mae; immo quanto forma est nobilior, tanto in suo esse semper excedit materiam. Quod patet inspicienti operationes formarum, ex quarum consideratione earum naturas cognoscimus. Unumquodque enim operatur secundum quod est. Unde forma, cujus operatio excedit conditionem materiae, et ipsa, secundum dignitatem sui esse, superexcedit materiam. Invenimus enim aliquas infimas formas, quae in nullam operationem possunt nisi ad quam se extendunt qualitates quae sunt dispositiones materiae, ut calidum, frigidum, humidum, siccum, rarum, densum, grave, et leve, et his similia, sicut formae elementorum. Unde istae sunt formae omnino materiales et totaliter immersae materiae. Super has inveniuntur formae mixtorum corporum, quae, licet non se extendant ad aliqua operata quae non possunt compleri per qualitates praedictas, interdum tamen operantur illos effectus altiori virtute corporali. . . . Super has iterum inveniuntur aliquae formae quarum operationes extenduntur ad aliqua operata quae excedunt virtutem qualitatum praedictarum, quamvis qualitates praedictae organicae ad harum operationes deserviant; sicut sunt animae plantarum quae etiam assimilantur non solum virtutibus corporum caelestium in excedendo qualitates activas et passivas, sed etiam ipsis motoribus corporum caelestium,

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It will be necessary to add a few short notes explanatory of the above quotation.

i. St. Thomas held the opinion, which apparently was commonly received among the medieval philosophers, that mixed or compound bodies occasionally received from the influences of the heavenly bodies certain virtues which accompany their specific nature; and he instances the attractive power of the lode-stone. Intimately connected with this theory was another, commonly maintained in the School, touching the essential constitution of the heavenly bodies, to the effect that the matter and substantial Forms and their mutual relation are of a distinct and nobler order than their sublunary counterparts, which secure to these bodies a natural indestructibility.

ii. It was generally held in those times, that Angels preside over the motions of the heavenly bodies. Such interference would not at all affect the constant order (which is the same as physical law) established in regard of such motions from the beginning.

iii. St. Thomas maintains, (as has been already hinted, and will come more directly under our notice presently), that some animals have an obumbration,—or an anticipation after a manner,—of thought and will.

iv. According to St. Thomas sensation and imagination transcend the capacity of mere matter and material organism in their virtue, though they depend on a bodily organ for their exercise. In fact, who is there but sees, that between the vibrations of the optic nerve

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inquantum sunt principia motus rebus viventibus, quae movent seipsa. Super has formas inveniuntur aliae formae similes superioribus substantiis, non solum in movendo, sed etiam aliqualiter in cognoscendo; et sic sunt potentes in operationes ad quas nec organicae qualitates praedictae deserviunt, cum operationes hujusmodi non compleantur nisi mediante organo corporali, sicut sunt animae brutorum animalium. Sentire enim et imaginari non complentur calefaciendo et infrigidando, licet haec sint necessaria ad debitam organi dispositionem. Super omnes autem has formas invenitur forma similis superioribus substantiis, etiam quantum ad genus cognitionis, quod est intelligere; et sic est potens in operationem quae completur absque organo corporali omnino. Et haec est anima intellectiva; nam intelligere non fit per organum corporale. Unde oportet quod id principium quo homo intelligit, quod est anima intellectiva et excedit materiae conditionem corporalis, non sit totaliter comprehensum a materia aut ei immersum, sicut aliae formae materiales; quod ejus operatio intellectualis ostendit, in qua non communicat materia corporalis. Quia tamen ipsum intelligere animae humanae indiget potentiis quae per quaedam organa corporalia operantur, scilicet imaginatione et sensu, ex hoc ipso declaratur quod naturaliter unitur corpori ad complendam speciem humanam.' *Cg. L. II, c°* 68.

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and the psychical perception of sight,—multiplex yet simple, immaterial yet materially representative,—there is a hiatus which no physical discoveries ever have filled up, ever can fill up?

v. According to the Scholastic philosophy human thought, like human will, is of itself absolutely independent of any bodily organ. But, as all human thought is originally derived from sensile perceptions, and as in the actual order man cannot elicit a thought which is not necessarily accompanied by a phantasm, (either a present sensile perception or the resuscitation of an impression,—a sensile species,—produced in the lower part of the soul by former sensations); it in this way *indirectly* postulates the co-operation of bodily organs. Hence, the fatigue of thought.

Again in another part of the same work St. Thomas treats of the same division from a somewhat different point of view; since he considers the respective operations of these four distinct grades of material being in relation to their immediate and formal terms. The passage, which is as follows, is pregnant with useful and interesting intimations for the benefit of the student.

'According to the diversities of natures we discover a different mode of emanation in entities; and by how much a given nature is of a higher order, by so much is that which emanates from it more internal. For among all entities inanimate bodies hold the lowest place; and in their case emanations can occur in no other way than by the action of one of them upon some other. For in this way fire is generated from fire, in that an external body is altered by the fire, and is led on to the quality and nature of fire. After inanimate bodies, however, plants hold the next place, in which the emanation begins to proceed from the interior; forasmuch as the internal sap of a plant is converted into seed, and that seed, committed to the ground, grows into a plant. Already, then, we here find the first grade of life; for living things are such as move themselves to operating, while those which can only move entities external to themselves are wholly destitute of life. Now, the indication of life in plants consists in this, that what is within them evolves a certain Form. The life of plants, however, is imperfect; because, although in their case the emanation proceeds from within, nevertheless that which emanates, issuing forth little by little from the interior parts, finally appears altogether outside. For the sap of a tree, at first issuing from the tree, becomes a flower and at length a fruit distinct from the bark

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of the tree, though conjoined with it; but when the fruit is ripe, it is wholly separated from the tree and, falling on the earth, produces another plant by its seminal virtue. Moreover, if one attentively considers, the first beginning of this emanation is assumed from outside; for the sap intrinsic to the tree is drawn by the roots of the tree from the earth, whence the plant receives nourishment. Again: Above the life of plants we discover a higher grade of life which belongs to the sensitive soul; whose proper emanation, though commencing from without, is nevertheless terminated within; and by how much the emanation has progressed, by so much the more it eventually arrives at that which is internal. For the object of sensile perception impresses its form on the external senses, whence it goes on to the imagination, and beyond this to the treasury of the memory. Nevertheless, in every stage of this emanation, the principiant and the term belong to different entities; for no sensitive faculty reflects upon itself. This grade of life is by so much of a higher order than the life of plants, by how much the operation of the former is more fully contained within. It is not, however, an altogether perfect life; since the emanation invariably proceeds from one to another. Accordingly, there is the highest and perfect grade of life; and this belongs to the intellect. For the intellect reflects on itself and can know itself[1].'

[1] 'Secundum diversitatem naturarum diversus emanationis modus invenitur in rebus; et quanto aliqua natura est altior, tanto id quod ex ea emanat magis est intimum. In rebus enim omnibus inanimata corpora infimum locum tenent, in quibus emanationes aliter esse non possunt nisi per actionem unius eorum in aliquod alterum; sic enim ex igne generatur ignis, dum ab igne corpus extraneum alteratur, et ad qualitatem et speciem ignis perducitur. Post inanimata vero corpora, proximum locum tenent plantae, in quibus jam emanatio ex interiori procedit, inquantum scilicet humor plantae intraneus in semen convertitur, et illud semen, terrae mandatum, crescit in plantam. Jam ergo hic primus gradus vitae invenitur; nam viventia sunt quae seipsa movent ad agendum, illa vero quae non nisi exteriora movere possunt, omnino sunt vita carentia. In plantis vero hoc indicium vitae est, quod id quod in ipsis est movet aliquam formam. Est tamen vita plantarum imperfecta; quia emanatio in eis, licet ab interiori procedat, tamen paulatim ab interioribus exiens, quod emanat finaliter omnino extrinsecum invenitur. Humor enim arboris, primo ab arbore egrediens, fit flos, et tandem fructus ab arboris cortice discretus, sed ei colligatus; perfecto autem fructu, omnino ab arbore separatur, et in terram cadens, sementina virtute producit aliam plantam. Si quis etiam diligenter consideret, primum hujus emanationis principium ab exteriori sumitur; nam humor intrinsecus arboris per radices a terra sumitur, de qua planta suscipit nutrimentum. Ultra plantarum vero vitam altior gradus vitae invenitur, quae est secundum animam sensitivam, cujus emanatio propria, etsi ab exteriori incipiat, in interiori tamen terminatur; et quanto emanatio magis inces-

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By emanation the Angelic Doctor evidently means the specific natural operation as connotative of its immediate and formal term. According to the teaching of St. Thomas, then, there are four grades of emanation in material Forms:—

i. Wherein the emanation is *wholly external*, beginning and terminating with some external object. Such is that of *inanimate bodies*.

ii. Wherein the emanation begins *from within*, but terminates *externally*. This indicates spontaneous motion in which life essentially consists. Such is that of *plants*.

iii. Wherein the principiant of the emanation is *outside*, but its term *inside*. Such is that of *irrational animals*. Perhaps this needs a word of explanation. In an act of sensation, that which is provocative of the soul's action is some definite object of the senses, external to the soul; the sensile representation itself, however, which is the term of the soul's action, is internal.

iv. When the principiant as well as term of the emanation are alike *internal*. Such is that of *man*. This is only possible by the reflex action of the intellect.

Lastly: St. Thomas considers these same divisions in their relation to the Exemplar and Final Cause. 'Every Form,' he writes, 'is a sort of likeness of the First Cause, Who is pure Act. Wherefore, by how much a Form approaches nearer to His likeness, it participates in more of His Perfections. Now, among bodily Forms the rational soul approaches more nearly to the likeness of God, and therefore it participates in the Excellences of God,—in that, for instance, it thinks, and can cause motion, and subsists in its own right. The animal soul participates in less measure; the vegetative soul, in still less; and so on[1].'

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serit, tanto magis ad intima devenitur. Sensibile enim exterius formam suam exterioribus sensibus ingerit, a quibus procedit in imaginationem et ulterius in memoriae thesaurum. In quolibet tamen hujus emanationis processu, principium et terminus pertinet ad diversa; non enim aliqua potentia sensitiva in seipsam reflectitur. Est ergo hic gradus vitae tanto altior quam vita plantarum, quanto operatio hujus vitae magis in intimis continetur. Non tamen est omnino vita perfecta, cum emanatio semper fiat ex uno in alterum. Est igitur supremus et perfectus gradus vitae, qui est secundum intellectum. Nam intellectus in seipsum reflectitur, et seipsum intelligere potest.' *Cg. L. IV, c°* 11.

[1] 'Omnis forma est aliqua similitudo primi principii, qui est actus purus. Unde quanto forma magis accedit ad similitudinem ipsius, plures participat de perfectionibus ejus. Inter formas autem corporum magis appropinquat ad similitudinem Dei anima rationalis; et ideo participat de nobilitatibus Dei, scilicet quod intelligit, et quod potest movere, et quod habet esse per se; et anima sensibilis minus, et vegetabilis adhuc minus; et sic deinceps.' 1 *d.* viii, *Q.* 5, *a.* 2, 5[m].

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PROPOSITION CXCIII.

Within each of the first three aforesaid principal gradations of substantial bodily Forms, there are specific diversities discoverable in ascending degrees.

This Proposition has been allowed a place in the present Article for the same reasons as those that caused the admission of the preceding Proposition. Its declaration by the Angelic Doctor will be found under the second paragraph of the passage quoted in the *hundred and eighty-sixth* Thesis. The evidence of universal experience in its favour is so complete as to obviate all need of proof. Every text-book on chemistry, botany, zoology, is constructed on the presumption of its truth. Even the uneducated have a settled conviction that reptiles, insects, fish, birds, beasts, are essentially different from each other; and that there is a similar difference between trees, grass, plants, ferns, mosses, sea-weed. Nor would they be less prone to acknowledge that water, fire, gas, iron, sulphur, charcoal, gold, sand, are thoroughly distinct the one from the other.

NOTE. It is equally undoubted that there are sensible variations in many,—if not all,—of these specific divisions. Most people are aware of the difference among *dogs* of a *setter*, a *pointer*, a *greyhound*, *spaniel*, *mastiff*, *bull-dog*, *terrier*, as also of variations in some of these kinds,—for instance, the *Italian greyhound*, the *Blenheim spaniel*, the *Gordon terrier*. So likewise, among *cats* most of us have heard of,—if not seen,—the *tortoise-shell*, *Angora* or *Persian*, the *Manx*. Similarly, farmers are practically acquainted with differences in wheat and barley as well as in breeds of cattle and in sheep.

PROPOSITION CXCIV.

From the truths enunciated in the preceding Propositions it is reasonable to conclude, as conducing to the completeness of cosmic unity, that there will be substantial Forms which may serve to unite the highest Forms of one division with the lowest Forms of the division immediately above it, by embracing certain characteristics of both.

DECLARATION OF THE PROPOSITION.

From the Propositions which have gone before we gather, that the material universe was created for the purpose of manifesting

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the Divine Perfection; and that, as such manifestation could not be completed, (even in the limited sense in which the finite can be said to be a completed manifestation of the Infinite), in any one solitary created Form, it was necessary that there should be a diversity of substantial Forms and, consequently, of specific natures. But, if such multiplied Forms and essences are to prove a real manifestation of the Divine Perfection, there is another condition imposed, so to say, by the Exemplar. The likeness must do its best to represent the Unity of the Prototype. Yet, an entitatively singular unity, from the nature of the case, is impossible. It is true, indeed, that there is an entitative unity of Subject; since all substantial bodily Forms are acts of the same primordial matter. But such unity partakes of the all but unintelligibility of its basis, and virtually disappears in its apportionment and determination under substantial and accidental Forms. It remains, therefore, that there must necessarily be a cosmic unity of order. Now, as a fact, we find the material universe to be divided into four primary gradations of being, beginning with inanimate and unorganized bodies, ascending thence to vegetative life, thence to animal or sensitive life, and thence to the highest grade, man. Lastly, it has appeared that under each of the first three gradations there are specific differences and, under these latter, variations. These specific differences continue in an ascending scale from the lowest to the highest Forms within each kingdom or primary gradation. To this point we have already reached by previous examination; and the result is a chain whose links, beginning with the elements, gradually proceed upwards, till the highest link carries us beyond matter into another order, with which for the present we have nothing to do.

So far, however, there are some links missing; for there seems to be an absolute break between each of the four primary gradations. The separation between inanimate bodies and vegetative life, that between vegetative and sensitive life, and finally the separation between irrational animals and man, have not as yet been in such wise diminished that we may be able philosophically to combine them all in a developed unity of order. We seem to be in presence of a quaternity that is incapable of ulterior reduction,—four independent kingdoms utterly disconnected with each other. It would seem necessary, therefore, to the perfectness of cosmic unity, more particularly as representative of the Divine Unity, that

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there should be certain (shall we call them so?) *interstitial* substantial Forms, embracing, as it were, the lower and the higher gradation by surpassing the highest development of the former, while exhibiting to some extent the nature of the latter. To this end it matters little whether the Form properly belongs to the higher or lower gradation, provided that it embraces certain characteristics of both. Experience and observation show that this requirement is fulfilled. The missing links do really appear.

But, before illustrating this position from the evidence of physical facts, let an observation or two be made by way of introduction. First of all, when it is asserted that these intervening Forms unite the highest Forms of the inferior with the lowest Forms of the immediately superior gradation, this must not be interpreted to mean that they are themselves reckoned among the lowest Forms of the superior order while exhibiting certain characteristics of the highest Forms in the lower order, or *vice versa;* more particularly if we adopt the modern systems of classification. All that is urged is this; that there are certain Forms which exceed in certain of their operations or properties the highest manifestations of the kingdom under which they are ranged, or that they exhibit certain operations or properties characteristic of a kingdom inferior to the one under which themselves are ranged. Hence,—and this is the second observation,—such a junction of the two kingdoms may be exhibited by the Form in one of two ways. Since the Form cannot actually belong to the two kingdoms of being at once, (for, could this be verified, the substantial composite would subsist in two specific natures simultaneously, which is metaphysically impossible); it must either belong to the inferior kingdom with characteristic anticipations of the superior, or it must belong to the superior kingdom, though exhibiting certain retrograde characteristics of the inferior. The latter,—and this is the third observation,—is the more common and the more satisfactory, because its evidence in support of the present Thesis is clearer. It assists us in filling up the first and second gaps; but the former is alone possible in relation to the third.

With these preliminary remarks, let us examine separately these three gaps, for the purpose of testing the truth of the doctrine propounded by the Angelic Doctor, and of determining whether these missing links are provided for us by physical observation. Wherefore, i. Is there any Form that seems to connect the

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vegetable kingdom with inanimate bodies? By way of answer to the question, let us examine into the nature of the *seed-Form*. This Form undoubtedly belongs to the vegetable kingdom; a sign of which is, that it is conjoined with a partial and rudimentary, (it is true), yet real, organization of the matter, which is a property of life. Within the seed is enclosed the embryo of the future plant with its germinal radicle and stem-bud, or plumule. Round the afore-named essential constituents of the embryo, entirely closing them in, are two lobes or cotyledons, (the illustration is taken, for the sake of clearness, from the more numerous class of dicotyledonous plants), which, though claiming to be a part of the embryo, in the majority of cases seem to be purely provisional and, within the embryo-sac, supply the embryo with its necessary food, as soon as the latter commences its vegetable life by the evolution of its plant-Form. When, then, it is said that the seed-Form undoubtedly belongs to the vegetable kingdom, the assertion must be understood of such Form *as* provisional and transitory in its own nature, and as only *potentially* a *living* Form. It belongs to the vegetable kingdom, because its properties,—or essential qualitative accidents,—virtually contain the true vegetable Form of the parent plant which was the proximate efficient cause of both.

Now, there are certain things connected with this embryo within the seed, which are deserving of particular notice. First of all, in its isolated state,—separated from the parent plant, separated from certain causal prerequisites such as soil, water, etc.,—it shows no signs whatsoever of growth; so that it can remain, as it appears, for more than two thousand years in its primeval condition, though all along capable of development and, after that lapse of time, actually developing its plant-Form. This has been verified, (so at least it is reported), in the instance of corn that had been buried with certain mummies. Yet growth is the natural and, therefore, necessary operation of plants.

Again: In phanerogams generally, within the seed-coats,—or integuments of the embryo-sac,—besides the embryonic vesicle with its two cotyledons, (the examination, for the sake of precision, is still limited to dicotyledonous plants), there is stored up a treasury of food, which in modern books is called endosperm,—otherwise named albumen, from its principal constituent. This, together with material enclosed within the cotelydons, is the source of nourishment to the young embryo, previous to its breaking

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through the boundaries of its temporary prison. All seeds of phanerogams contain this endosperm; 'the only reason why the ripe seeds of many Dicotyledons do not contain any endosperm is because it has already been absorbed and supplanted by the rapidly growing embryo before the seeds become ripe, while in others this absorption happens only on germination after the ripening of the seeds, i.e. on the unfolding of the embryo[1].' Now, it is of some importance to inquire into the nature of this endosperm, which is brought into such intimate local as well as entitative relation with the embryo while yet confined within the *testa*, or outer integument of the seed. Roughly speaking, it may be said to consist of two elements; viz. nitrogenous substances in the form of albuminoids on the one hand, and certain carbo-hydrates and oils on the other. The albuminoids go to constitute the *protoplasm*, so called, of the plant; the carbo-hydrates and oils, to form the cell-walls, or what has been called *cellulose*. What, then, after all is this famous protoplasm? It is 'a compound,' says Professor Thomé, 'of different organic substances, among which albuminous (nitrogenous) are never absent, and usually constitute the bulk of it[2].' These constitutive substances are apparently called *organic*[3], because they are not found to enter into the composition of other than organic substances. But the protoplasm is itself organic, according to the authority just quoted; and organic in another sense,—that is to say, it has in itself an organic structure. It will be well to quote his own words, since it is intended to reduce them afterwards into logical form. Thus, then, he writes: 'It (protoplasm) cannot therefore be destitute of structure, but must be already organized; and it must be simply the imperfection of our microscopes which prevents us from recognizing that organization which is a necessary accompaniment of all vital phenomena. One of the most important of these phenomena is its *motility* (sic), or power of movement[4]'. One cannot help remarking, that the above piece of

[1] *Julius Sachs' Text-Book of Botany, Book II, Group V*, note 2; *translation by Bennett and Dyer, p.* 421.

[2] *Text-Book of structural and physiological Botany, Introduction; translation by A. W. Bennett, p.* 9:—A very valuable little Work on the subject of which it professedly treats.

[3] The word, *organic*, seems to be used by physicists in a variety of senses, which is misleading and creates no little confusion. Sometimes it means that which has an organism,—is itself organized; sometimes, that which is derived from an organized substance; sometimes, again, that which goes to the constitution of organisms.

[4] *Ibidem, pp.* 9, 10.

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reasoning is purely deductive, and a deduction from somewhat slipshod premisses. Let us reduce the argument to the shape of a sorites. Protoplasm moves. Motion is a phenomenon of life; (not all motion though, as is plain). Life postulates organism. Therefore, protoplasm must have an organism. But no microscopic observations have been able to discover any such organism. So much the worse for the microscopes; if they were more perfect, they assuredly would. Surely, this style of reasoning has nothing in common with that physical induction which is the crowning glory (so we are told) of our modern experimentalists. To return, however, to the examination of the contents of our seed:—These albuminoids are composed of carbon, hydrogen, oxygen, and nitrogen, in different proportions; and it is a point which merits especial notice, that the albumen so called of plants and that of animals is constituted of the same elements. We may fairly consider, then, the said protoplasm to be unorganized, till such time as its organism has been established by observation and experiment. On the other hand, as to the carbo-hydrates, (which are constituted by combinations of carbon, hydrogen, and oxygen), and the oils, the question of organism is not in the way of being even mooted, since they have no share in the mobility of the protoplasm.

That which has been here advanced touching the endosperm, equally applies to the reserve material contained in the cotyledons.

What are the practical issues of these physical facts? Thus much. In a dicotyledonous seed, in separation from its parent plant, you have a plant *only in potentiality;* but, till its germination commences, an inanimate substance *in act.* Its contents consist in part of matter under a rudimentary organization,—as in the axis and cotyledons;—in part, of unorganized matter, ready, however, to become organized by absorption within the embryo, whensoever the plant-Form with its vegetative life should be evolved. Meanwhile, these two elements subsist in conjunction under the seed-Form. Here, then, we have the closest link that could well be conceived between inanimate bodies and plants. It may be objected, with some show of reason, that the seed-Form is merely preparatory and transitional; and, as a consequence, can hardly be said to supply the missing link. But, in answer to this objection, there are three things to be said. First of all, transitional Forms, wherever they are discoverable, are the very links

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that we are in search of; nor does their being preparatory and only for a time rob them of their value in this respect. Secondly, in the leap more particularly from inert material substances to living organisms, a transitional Form, from the nature of the case, could be the only one capable of forming a link between the two. Lastly, though the seed-Form is essentially provisional in its character; yet practically it remains such as it is till the seed is acted upon by some agent and begins to germinate, so that, as we all know, the latter is a staple article of food.

ii. The connecting link between the vegetable and sensitive kingdoms is to be found, partly in some anticipatory Forms of plants; in greater part, however, from the Forms of certain animals that exhibit characteristics of vegetative life. Among the former may be mentioned the sensitive plant which seems to have something analogical to the sense of touch; as likewise certain so-called carnivorous plants,—*Venus' fly-trap*, for instance,—which seize insects that come within their reach, keep them in confinement, and by varying processes feed upon them. But by far the more important Forms that constitute the desired link are to be found among animals which either exhibit characteristics of plants or privatively approach to the imperfection of the same by the rudimentary nature of their sensitive life. Among these the first characteristic that shall be signalized, because the Angelic Doctor adduces it in connection with this subject, is an absence of locomotion. This we find in the infusorian *vorticella* and *epistilis*, among the *protozoa*,—the *corynida*, and others, under the sub-kingdom of the *coelenterates*,—the *crinoeidea* and some of the *rotifera* under the sub-kingdom of the *annuloids*,—the *tubicola*, or *cephalobranchiata*, among the *annelids*, in the sub-kingdom of the *annulosa*,—and families of various classes under the sub-kingdom of the *molluscs*. A second noteworthy characteristic is propagation, or reproduction, by budding and fission, without the immediate conjunction of the germ and sperm cells. This is very common in all but the higher orders of animals. In the sub-kingdom of the *protozoa* it may be said to be the rule rather than the exception. In the sub-kingdom of the *coelenterates* reproductive organs exist, but reproduction is often effected by budding and fission, (that is to say, splitting off from the parent). In the sub-kingdom of the *molluscs*, many of the lower Forms (*molluscoids*) are capable of forming colonies by continuous budding. A third characteristic of vegetative life is

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the absence of a nervous system and of organs of sense, which are properties of the sensitive life. One sense every animal must have, if an animal it is to be called,—viz. the sense of touch. But this sense does not seem to require any very special organism, which,—as in the instance of the *amoebea*,—is improvised for the occasion. This exception made, let us proceed to examine how far certain animals approximate to vegetable-Forms by the absence of the above-named characteristics of the sensitive life. Now, in the first two sub-kingdoms,—those of the *protozoa* and of the *coelenterates*,—it may be said roughly, that there is no nervous system and certainly none of the other four organs of sense; for, where a definite mouth exists, it would appear to be a mere aperture for the admission of food. Under the sub-kingdom of the *annuloids*, more particularly in the class of *echinoderms*, we come across a rudimentary nervous system and rudimentary eyes, (*ocelli*). In the sub-kingdom of the *annulosa*, the *anarthropods* have a more complex nervous system; but the rudimentary eyes continue to be the only developed organs of sense. The *arthropods* have a yet more complex nervous system; yet, in the class of the *crustaceans* the eyes are sometimes wanting[1]. Here, however, in the highest order of *decapods* we come across a rudimentary organ (and, consequently, sense of hearing) in the shape of auditory sacs. It is not certain that they have an organ of smell, though Professor Huxley in his singularly interesting Work on *the Crayfish* observes, that 'There is a good deal of analogical ground for the supposition that some peculiar structures, which are evidently of a sensory nature, developed on the under side of the outer branch of the antennule, play the part of an olfactory apparatus[2].' Similarly, as to the organs of taste

[1] 'Indeed, the only segment' in the crustaceans 'that may be said to be persistent, is that which supports the mandibles, for the eyes may be wanting, and the antennae, though less liable to changes than the remaining appendages, are nevertheless subject to very extraordinary modifications, and have to perform functions equally various. Being essentially and typically organs of touch, hearing, and perhaps of smell, in the highest Decapods,' (so that the auditory sacs would seem to be hardly necessary), 'they become converted into burrowing organs in the *Scyllaridae*, organs of prehension in the *Merostomata*, claspers for the male in the *Cyclopoidea*, and organs of attachment in the *Cirripedia*. Not to multiply instances we have presented to us in the Crustacea, probably the best zoological illustration of a class, constructed on a common type,'—derived exclusively from material structure,—'retaining its general characteristics' (material), 'but capable of endless modification of its parts, so as to suit the extreme requirements of every separate species.' *H. Woodward, quoted in Nicholson's Manual of Zoology, P. I, Ch.* xxxi, p. 193.

[2] *Ch. iii, p.* 114.

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the same distinguished physicist remarks, 'It is probable that the crayfish possesses something analogous to taste, and a very likely seat for the organ of this function is in the upper lip and the metastoma; but if the organ exists it possesses no structural peculiarities by which it can be identified[1].' This last sentence reminds one of the reasoning of Professor Thomé concerning protoplasm; and does not serve to elucidate the writer's well-expressed, but scarcely philosophical, account of science,—given in his first Chapter,—that 'science is simply common sense at its best; that is, rigidly accurate in observation, and merciless to fallacy in logic[2].' It occurs to inquire, why *it is probable that the crayfish has something analagous to taste*, seeing that the presence of a corresponding organ cannot be identified. Surely, in those regions of thought outside the realm of matter we could rarely meet with a more gratuitous assumption; notwithstanding that 'whatever lies beyond' 'the course of nature,' 'is outside science[3].' To resume: Under the sub-kingdom of the *molluscs*, the nervous system and sense-organization at first retrograde in comparison with the inferior sub-kingdom; for the *molluscoids* have a simple nervous system, and only in some classes have organs of sight. Even in the true *molluscs*, the lowest order of *lamellibranchiata* are either wholly destitute of organs of sight, or have simple eyes, and have no distinctly differentiated head; but their nervous system, like that of the true *molluscs* in general, is of a higher order, comprising three principal ganglions,—the supra-oesophageal, the infra-oesophageal or pedal, and the parieto-splanchnic. As we proceed higher, however, a marked development takes place, which conducts us to the porch of the *vertebrates*. In the class of *cephalopods*, (including the *cuttle-fish*, *octopus*, *nautilus*, etc.), we find a very high type of eye-organism and undoubted organs of hearing, while the nervous system is more concentrated. The *nautilus* has 'two hollow plicated subocular processes, believed to be olfactory in their function[4].'

Finally: There is a remarkable instance of the exhibition, by a

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[1] *Ibid. p.* 115.

[2] *Ibid. p.* 3. What a pity it is that this talented and lucid writer should be perpetually going out of his way to introduce his opinions relatively to those higher spheres of thought which have no direct bearings on the subject to which he has devoted his energies with such deserved success. '*All keys hang not on one girdle.*'

[3] *Ibidem, p.* 3.

[4] *Nicholson's Manual of Zoology, Part I, Ch. l, p.* 309.

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creature belonging to the animal kingdom, of certain characteristics of the plant, which was communicated by Mr. Geddes to the Royal Society in March, A.D. 1879. The green *rhabdocele planarian*, (*convoluta Schultzii*), which ranks under the sub-kingdom of the annuloids, not only exhibits chlorophyll, which certain other lower forms of animal life are known to do; but the chlorophyll exercises in this planarian vegetable functions, so that, when the animal submits itself to the action of the sun's rays, (which it seems to seek instinctively), it evolves oxygen at a rate of from 45 to 50 per cent. of the gas evolved. Further: These animals, when boiled, yield starch, and their ashes contain iodine,—both characteristics of vegetable organism.

There has been a motive in entering into these details which otherwise might seem to have been needlessly extended. From the foregoing facts three principal conclusions may be gathered:

1. There are undoubted animals which have but one sense,—at least, only one organ of sense,—to mark externally their sensile Form; and, on the other hand, retain characteristics and certain special functions of plants. To establish this fact has been the main purpose in the above collection of physical phenomena; for it is here principally that we find the link between the vegetable and animal world.

2. There is shown to be a progressive development in the organs peculiar to the sensitive life; and it is not till we get under the very shadow of the vertebrates, that we find all these organs fully developed. The Forms, therefore, grow in perfectness.

3. If a truly scientific classification of animals, based upon those functions and organs that essentially distinguish animal, or sensitive, from vegetative life, should ever come to be adopted, (would that some competent naturalist would summon courage to gird himself for the task!); it is plain that it must be a classification very different from the one now accepted, and one subversive of certain crude theories which at present lie, as an incubus, on this interesting and valuable department of knowledge.

iii. There remains the yet more pronounced break between the animal kingdom and man. There is no question of mere organism here, but of natural operations and properties that are indicative of a substantial Form which surpasses all material conditions. Is there a discoverable link between the spiritual Form of man and the material Forms of brutes? There is one element of connection in

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the fact, that the soul of man exercises in the human body all the functions of sensitive and vegetative life. But this point is reserved for the next Proposition. Setting it on one side, therefore, for the moment, it is plain, from the very nature of the case, that it will not be possible to discover such a link in any supposed order of men possessing a specific nature half-way between spirit and matter; for such a hypothesis is a contradiction in terms. A spirit cannot be more or less spirit after the manner that matter can be more or less organized. A Form must be wholly spiritual, or wholly unspiritual; though its faculties may be partly the one, partly the other. Neither is it possible, for the same reason, that there should be a common ancestry, save in the analogical sense that the two classes of Forms actuate the same primordial matter, and that the material organism exhibits a progressive development, in its gradual disposition for receiving the human soul, which carries matter successively through the lower gradations up to its highest known structure under the actuation of successive provisional Forms. It is hard to imagine that the distinguished naturalists who have overleaped the boundaries of their particular discipline, in order to offer us their theories touching this subject can be in earnest when they represent the intellect and will of man as developed functions of matter, or the soul of man as a development of the instinct of brutes. It looks like an ill-timed joke, to be gravely informed that man's recognition of a God and of the consequent duty of religious worship can find its germ in the barking of a dog at the unexpected opening of a parasol[1]. Dismissing, then, these follies, we must find the missing link,—if anywhere,—among the substantial Forms of irrational animals, as anticipatory, according to the measure of their capacity, of the special or distinctive faculties of the human soul. And here, as a fact, we find it. In certain higher orders of animals their natural operation exhibits itself after a manner markedly distinct from that of other animals, and (so far as a material Form can do) anticipates, or rather foreshadows, the distinctive action of spiritual Forms. There are two faculties of a spiritual Form,—and two only, so far as we know,—viz. intellect and will. But, as has been observed in an earlier part of this Volume, certain animals exhibit something that looks very like both. For instance,—to repeat the instance of the Angelic Doctor;—sheep

[1] *Darwin's Descent of Man, Part I, Ch. 2, p. 67.*

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flee from wolf in general, not from *this* wolf in particular. Similarly, a cat will pounce upon any mouse, without troubling itself about its individual notes. But in this there is the exhibition of a sensile universal. St. Thomas offers another illustration in the action of birds that collect straw, twigs, feathers, etc., not because these are a gratification to their senses, but because they are useful as material for building their nests[1]. He calls this faculty in animals *vis aestimativa;* and in one place remarks, that by it the sensitive soul of the animal 'Has a sort of slight participation of reason, reaching in its highest development to the lowest grade of the latter[2];' and that, by reason of the same faculty, 'Animals are said to have a sort of prudence[3].' Further: In another place he says, that brute animals have 'An imperfect cognition of their end, by which the end and the Good is known *in the particular;*' and that hence they are capable of fruition, which belongs to the appetitive faculty, 'after an imperfect manner[4].' Lastly: He adds, that they not only seek after that which is pleasing to sense,—for that is an operation proper to the sensitive Form;—but they pursue victory, which they obtain *painfully*, and this 'After a sort reaches to the higher appetite[5],'—that, namely, of the will. Yet, there are three distinguishing characteristics of the spiritual Form, which the purely animal Form can never reach; viz. 1. the formation of an abstract universal, and therefore of good as *the* Good, of end as *the* end: 2. freedom of the will, and consequently true choice: 3. self-consciousness.

Corollary.

Just as there are connecting links between the four principal gradations of material being; so are there similar connecting links between the species which divide these gradations, with the exception of the highest gradation in which but one species can be found.

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[1] 1ª° lxxviii, 4, *c.*

[2] 'Aliquid vero, secundum quod habet aliquam participationem modicam rationis, attingens ad ultimum ejus in sui supremo.' *Verit. Q.* xxv, *a.* 2, *c.*, *v. f.*

[3] 'Unde ratione hujus aestimationis dicuntur animalia quamdam prudentiam habere, ut patet in principio Metaphysicorum.' *Ibidem.*

[4] 'Imperfecta autem cognitio est, qua cognoscitur particulariter finis et bonum; et talis cognitio est in brutis animalibus.' 1-2ª° xi, 2, *c.*

[5] 'Quod relicto delectabili appetit victoriam, quam consequitur cum dolore, quod ad irascibilem pertinet, competit ei secundum quod attingit aliqualiter appetitum superiorem.' *Verit. Q.* xxv, *a.* 2, *c.*, *v. f.*

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Both serve to perfect the unity of the cosmic order. We have casually come across some indications of the latter in the declaration of the Thesis; but a full treatment of the subject more properly belongs to the naturalist. The words, then, of the Angelic Doctor, —towards the close of the second paragraph in the fundamental passage which prefaces the *hundred and eighty-sixth* Proposition,— are verified by the evidence of the physical disciplines: 'Moreover, under each of these orders he will find a diversity, accordingly as some are more perfect than others; in such wise that those which are highest in a lower genus are seen to approach the higher genus, and conversely. For instance, animals incapable of locomotion are like plants.'

PROPOSITION CXCV.

St. Thomas teaches that in embryos generally there is a progressive development of being; so that each embryo passes through the gradations of life inferior to its own by virtue of successive Forms which are provisional and transitory. In particular, such is his explicit teaching with regard to the human embryo. This theory, which is not unsupported by facts of physical experience, serves to throw fresh light on the perfection of cosmic order, as well as on the unity of the Subject.

PROLEGOMENON.

In two ways the unity of cosmic order is manifested in the four kingdoms of material Forms and their corresponding substances. One way is, by exhibition of the links which serve to connect the orders with each other. This was the purport of the preceding Proposition. The other way is, by establishment of the fact that these successive kingdoms, with the exception of the last, are simple developments of one from the other; in such wise that the inferior is the foundation of the gradation immediately above it, and the superior in consequence virtually includes all those that are inferior to it. Thus, the animal Form virtually and eminently includes the vegetable Form as well as the Forms of such elements as are included in the material constitution of the animal substance. Such is the purport of the present Proposition.

As the Enunciation of the Proposition expressly includes only living Forms, a fact has been omitted that is, nevertheless, in an eminent degree confirmatory of the truth for which we are now

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contending. There is not a single inanimate or animate body,—including that of man,—which is not exclusively composed of the primordial elements in their various chemical combinations. Here is the occasion to say a word about protoplasm, as it has been called. The metaphysician may securely wait, till much that is obscure and doubtful in connection with this young discovery shall have been elucidated by future observation and experiment. Thus much, however, may be fittingly said. As far as we know at present, there is no such thing as independent, or undifferentiated, protoplasm. It is always specific, and can only act within its own specific limits. But it receives specification, and with specification life, from the substantial Form that actuates it.

Declaration of the four Members of the Proposition.

I. In the First Member it is asserted, that *St. Thomas teaches that in embryos generally there is a progressive development of being* in the manner indicated; and that *such is his teaching in particular with regard to the human embryo.* These two propositions have been united under one Member.

In a passage which shall be given the Angelic Doctor is occupied in drawing a distinction between the generation of animals and that of inanimate substances; and he takes occasion to observe, that the generation of inanimate substances involves two Forms only,—the Form acquired in the newly generated body, and the Form expelled in the corruption of the previous composite. But, he proceeds to say, 'In the generation of an animal there appear diverse substantial Forms; since there first appears the generative element, and afterwards the blood, and so on, till there is the Form of a man or of an animal. Accordingly, such generation is necessarily not simple, but embracing within itself several generations and corruptions. For it is impossible that one and the same substantial Form should be *gradually* evolved into act, as we have shown.' The reason which the Angelic Doctor gives for this is twofold. One is, that a substantial bodily Form,—forasmuch as it belongs to the Category of Substance, (under which it is not directly included, only because of the incompleteness of its entity),—does not admit of *more* or *less*, as the Philosopher teaches us in his *Categories.* There are no entitative gradations in a substance, *qua* substance. It either is such or is not. The other is, that generation is the work of a moment. In the very same instant that the Form of the corrupted substance is expelled, the new Form is evolved. All the

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graduation that takes place in the process of generation belongs to the matter, which is little by little disposed for the eduction of the new Form and proportionally indisposed for the retention of the old Form. Now to proceed with the quotation:—'Thus, then, by the formative virtue which at the commencement is in the generative element' (the sperm cells) 'the Form of the generative element is expelled, and another Form introduced;—this latter expelled, another may be afterwards introduced; and in this way first the vegetative soul is introduced;—afterwards, this latter is expelled, and a soul that is sensitive at once and vegetative,' (that is to say, which virtually and eminently contains the latter), 'is introduced; —this last expelled, a soul which is rational at once and sensitive as well as vegetative' (virtually and eminently) 'is introduced, not by the virtue aforesaid,' i.e. by the formative virtue of the sperm-cell, 'but by the Creator. Accordingly, it is to be affirmed, in consonance with this opinion, that, previous to the possession of a rational soul by the embryo, it lives and possesses a soul, on the expulsion of which a rational soul is introduced[1].'

In this passage the Angelic Doctor traces the evolution of a human embryo from the moment of its conception up to its complete development under a specific human Form which is the spiritual soul. At first it exists as matter under a rudimentary organization and specifically constituted by that which we may call the foetus-Form,—itself including a variety of provisional and transitory Forms succeeding each other with the progress of the dispositions of the matter and of its incipient organism. *This is the first stage of evolution.* By virtue of the qualities inherent in this provisional body and communicated to it by the generating agent, the organization progresses, until the matter becomes indisposed for retaining the foetus-Form and evolves the plant-Form,

[1] 'In generatione autem animalis apparent diversae formae substantiales; cum primo appareat sperma, et postea sanguis, et sic deinceps quousque sit forma hominis vel animalis. Et sic oportet quod hujusmodi generatio non sit simplex, sed continens in se plures generationes et corruptiones. Non enim potest esse quod una et eadem forma substantialis gradatim educatur in actum, ut ostensum est. Sic ergo per virtutem formativam quae a principio est in semine, abjecta forma spermatis, inducitur alia forma; qua abjecta, iterum inducatur alia: et sic primo inducatur anima vegetabilis; deinde, ea abjecta, inducatur anima sensibilis et vegetabilis simul; qua abjecta, inducatur non per virtutem praedictam sed a creante, anima quae simul est rationalis, sensibilis, et vegetabilis. Et sic dicendum est secundum hanc opinionem, quod embryo antequam habeat animam rationalem, vivit, et habet animam, qua abjecta, inducitur anima rationalis.' *Po*ª *Q.* iii, *a.* 9, 9ᵐ, *in f.*

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whereupon the natural operations of growth and assimilation commence. *This is the second stage of evolution.* Under the continued directive influence of the same qualities the provisional substance, now actuated by a vegetative soul, progresses in the perfectness of its organization, till the matter finally becomes indisposed for the further continuance of the vegetable-Form, and evolves the purely animal Form; whereupon commences the sensitive life,—the animal Form containing eminently in itself the efficacy of the vegetable Form. *This is the third stage of evolution.* The purely animal Form, however, in the instance of man is purely provisional, like those that preceded it; and the new substance continues to develope into a higher organism unfitted for mere animal life; whereupon, the sensitive Form recedes into the potentiality of the matter, and God creates a human soul in its place. *This is the fourth, complete, final, stage of evolution.* It remains, however, to add, that this human soul, as act of the body, includes eminently in itself the united efficacy of the sensitive as well as of the vegetable Form.

The above doctrine the Angelic Doctor has borrowed from the Philosopher who, in his work *De generatione animalium,* writes as follows: 'It is necessary definitely to determine . . . . with regard to a soul, according to which a thing is said to be an animal, (now, an animal is such according to the sensitive part of the soul), whether it exists in the sperm-cell and the embryo, or not; and whence. For no one would lay it down, that the embryo is in all respects deprived of life as a thing soulless; since the sperm-cells and foetuses of animals are not a whit less alive than plants, and are prolific up to a point. That they have, then, the nutritive soul,'—the vegetable Form,—'is plain; (and why it is necessary to receive it first, is evident from what has been defined concerning a soul in other treatises); and, developing, they receive the sensitive soul also, by which an animal' is specifically constituted. 'For *animal* and *man* are not generated simultaneously, nor *animal* and *horse;* and similarly in the case of all other animals;'—that is to say, in the embryonic beginnings of its animal, or sensitive, life, the animal does not exhibit a differentiation of the organism characteristic of the particular species to which it belongs. 'For the end' (or final cause) 'is produced last; and that which is specific to it is the end of the generation of each. . . . Plainly, then, it is to be laid down, that sperm-cells and separated embryos,'

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—that is to say, separated from the parent, like eggs or the spawn of fish,—'have the nutritive,' or vegetative, 'life in potentiality, but not in act; up to the time, or according as, the separated embryos draw their nutriment, and perform the function of such a soul. For it seems that all such beings live first of all a vegetative life; and as a consequence it is plain, that the same must be said of the sensitive and of the intellectual soul. For it is necessary to have each one of them potentially, previous to having them in act[1].'

Thus, then, the doctrine touching the gradual development and progressive differentiation of embryos is more than two thousand years old.

To sum up: St. Thomas, following the teaching of the Philosopher, explicitly includes irrational animals with man under the same law of substantial development; for, at the commencement of the passage quoted above, he speaks of the Form of a man and that of an animal indifferently. But since,—as Aristotle tells us,—the vegetable Form in both cases is in potentiality, previously to its being actual; it is certain that he intended to include plant-Forms under the same common law. But the question is set at rest by the following explicit declaration of the Angelic Doctor: 'The same thing is to be said of the sensitive soul in brutes, and of the nutritive soul in plants, and universally of all more perfect Forms in regard of those that are imperfect[1].'

II. In the Second Member of the Proposition it is asserted, that *this doctrine is not unsupported by facts of physical experience.* The

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[1] *Διορίσαι τε . . . καὶ περὶ ψυχῆς καθ' ἣν λέγεται ζῷον (ζῷον δ' ἐστὶ κατὰ τὸ μόριον τῆς ψυχῆς τὸ αἰσθητικόν) πότερον ἐνυπάρχει τῷ σπέρματι καὶ τῷ κυήματι ἢ οὔ, καὶ πόθεν. οὔτε γὰρ ὡς ἄψυχον ἂν θείη τις τὸ κύημα κατὰ πάντα τρόπον ἐστερημένον ζωῆς· οὐδὲν γὰρ ἧττον τά τε σπέρματα καὶ τὰ κυήματα τῶν ζῴων ζῇ τῶν φυτῶν, καὶ γόνιμα μέχρι τινός ἐστιν. ὅτι μὲν οὖν τὴν θρεπτικὴν ἔχουσι ψυχήν, φανερόν (δι' ὅτι δὲ ταύτην πρῶτον ἀναγκαῖόν ἐστι λαβεῖν, ἐκ τῶν περὶ ψυχῆς διωρισμένων ἐν ἄλλοις φανερόν)· προϊόντα δὲ καὶ τὴν αἰσθητικήν, καθ' ἣν ζῷον. οὐ γὰρ ἅμα γίνεται ζῷον καὶ ἄνθρωπος οὐδὲ ζῷον καὶ ἵππος, ὁμοίως δὲ καὶ ἐπὶ τῶν ἄλλων ζῴων· ὕστερον γὰρ γίνεται τὸ τέλος, τὸ δ' ἴδιόν ἐστι τὸ ἑκάστου τῆς γενέσεως τέλος. . . . τὴν μὲν οὖν θρεπτικὴν ψυχὴν τὰ σπέρματα καὶ τὰ κυήματα τὰ χωριστὰ δῆλον ὅτι δυνάμει μὲν ἔχοντα θετέον, ἐνεργείᾳ δ' οὐκ ἔχοντα, πρὶν ἢ καθάπερ τὰ χωριζόμενα τῶν κυημάτων ἕλκει τὴν τροφὴν καὶ ποιεῖ τὸ τῆς τοιαύτης ψυχῆς ἔργον· πρῶτον μὲν γὰρ ἅπαντ' ἔοικε ζῆν τὰ τοιαῦτα φυτοῦ βίον, ἑπομένως δὲ δῆλον ὅτι καὶ περὶ τῆς αἰσθητικῆς λεκτέον ψυχῆς καὶ περὶ τῆς νοητικῆς. πάσας γὰρ ἀναγκαῖον δυνάμει πρότερον ἔχειν ἢ ἐνεργείᾳ. De Generatione Animalium, L. II, c. 3, init.*

[1] 'Et similiter est dicendum de anima sensitiva in brutis, et de nutritiva in plantis, et universaliter de omnibus formis perfectioribus, respectu imperfectarum.' 1ae lxxvi, 4, c., *in f.*

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first fact to be adduced has already been brought before the notice of the reader; and consists in the preservation of seed under the seed-Form for a vast number of years, during the whole of which period the seed has evinced no operation of growth or assimilation. Nevertheless, afterwards it has been sown in the ground, and has sprung up into life, like other seeds. Consequently, the plant-Form was all along there potentially, but not in act. Another fact of singular value connected with the teaching of the Angelic Doctor on this point is, the striking similarity between the process and organs of fecundation, or reproduction, in plants and in animals. There are in both the germ-cells and sperm-cells, and the fertilization of the former by the latter,—that which may be called in both the nutritive yelk to support the embryo in the beginning of its growth,—in both the same tegumentary separation from the parent, yet indirect communication with the latter,—in both the same gradual development of organism. It is further curious to notice, that a great part of the nutritive matter, reserved in the endosperm and cotyledons (where these latter exist) for the service of the plant-embryo, is albuminous like that reserved for some animal-embryos,—for instance, the yolk in the eggs of birds. These facts are corroborated by another of singular value. Professor Ernst Haeckel, in his Work on *the Evolution of Man*, gives a 'systematic survey of the periods in human germ-history' in a tabular form. The following are the headings: 'FIRST MAIN DIVISION OF GERM-HISTORY. Man as a simple plastid.—*First stage:* Monerula stage.—*Second stage:* Cytula stage. SECOND MAIN DIVISION OF GERM-HISTORY.—*Third stage:* Morula stage.—*Fourth stage:* Blastula stage.' As yet there is no even rudimental development of any organ in the embryo. 'THIRD MAIN DIVISION OF GERM-HISTORY.—*Fifth stage:* Gastrula stage.—*Sixth stage:* Chordonium stage.' In the former the embryo consists of two germ-layers that give promise of an intestine and a mouth; in the latter, it 'possesses, in all essential points, the organization of a worm,' but apparently under a rudimentary form. FOURTH MAIN DIVISION OF GERM-HISTORY.—*Seventh stage:* Acranial stage,' the head not being distinctly separated from the trunk, and the brain-bladders not yet developed. '*Eighth stage:* Cyclostoma stage;' in which there appears the commencement of a rudimentary brain, as also the rudiments of three sense-organs, (eyes, ears, and nose), but jaws and limbs are wanting. '*Ninth stage:*

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Icthyod stage,' so called, because the embryo 'possesses, in essential points, the organization of a fish.' The arms and legs, that are to be, appear like fins, and the rudiments of an upper and lower jaw begin to show themselves. '*Tenth stage:* Amniotic stage,' wherein the embryo exhibits all the essential organization of a Vertebrate; and then gradually acquires 'the form peculiar to the Mammals, and at last the specific human form[1].' Why all this latter, and by far the most important, process of development has been huddled together under one *Stage*, is not difficult to discover, if we have regard to the principal aim of the writer; but it is scarcely scientific. Taking the classification, however, for what it is worth, if the reader carefully examines these divisions, he will find that, during two out of the four, there is no development of organism under any shape. Consequently, the actual substantial Form is certainly not animal; and it is fairly open to doubt whether there is anything like a true vegetable life; so that what of life there is must be borrowed, or rather derived and communicated. In the third main division there is no appearance of any even rudimentary nervous system or of sense-organs, without which the natural operation of an animal-Form is rendered impossible. Even in the fourth and last main division, the first stage exhibits the embryo in a state of organization utterly unfitted for any but the lowest Forms of animal life. It is only in the second stage that the brain-bladders begin to show themselves, and rudiments of the three principal sense-organs begin to appear; while it is only at the close of the last stage that the embryo receives its definite human differentiation. Before quitting this argument derived from facts of physiology, it may be as well to obviate a possible objection, by subjoining the following observation. Since all the Forms that precede the final one are provisional and transitory, and since the whole evolution from first to last is directed towards the organization of a human body by qualities essentially remaining throughout, which at the first were implanted by the agency of the generating cause, it must not be supposed that an elaborate vegetable organism will accompany, in the instance of animals, the presence of the vegetable Form and life; but only that, in the absence of an organism absolutely necessary to animal functions, there still exists an organism sufficient for the natural operations of vegetable

[1] *Table VIII, at the end of Ch. XII, pp.* 402-404.

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life,—that is to say, of growth and assimilation. On the other hand, it is worthy of notice that, in the lowest Forms of vegetable life, the simplest organism suffices; as may be seen in the *siphoneae* among the *algae*, which 'consist of a single sac-like, often branched cell, the free part that does not root in the ground containing a parietal layer of protoplasm with abundance of grains of chlorophyll, (but forming no nucleus)[1].'

III. The Third Member of the Proposition asserts, that *this theory serves to throw light on the perfection of cosmic order.* It surely needs but few words to justify this assertion. For, the truth of the teaching for which we are contending once admitted, not only must we acknowledge a gradual evolution of the whole complex and multiform universe of material substances from a few simple elements created in the beginning; but it is also manifest that this wondrous evolution is, so to say, more or less epitomized in the germ-history of each living individual in that universe. Successive Forms march through the captive matter, gradually evolved from the predisposed Subject; till they reach their climax where the potentiality of matter fails, and the creative Power of God supplies the needed Form.

IV. The Fourth Member adds, that *this teaching of St. Thomas serves to throw fresh light on the unity of the Subject.* This proposition, too, it will not take long to prove. For, if we set aside life as proper to the actuating Form and not to the Subject, what remains? A more or less complex organization. True: But, first of all, no one could have failed to notice that whatever may be the exquisite organic complexity of the perfected substance, the organism (if such it must be called) at the commencement was of the simplest and least differential sort. Moreover, organism is but an accident,—a property,—of material substance. Remove it then; and the rest is a heterogeneous compound, resolvable into the simple elements. Each one of these simple elements is constituted, when isolated, of two essential parts,—to wit, that which is cause of their differentiation, and that which is common to them all. Remove once more the differentiating cause which is the Form; and what remains? The common part, which is the universal Subject of all material Forms,—primordial matter. But who is there so obtuse as not to perceive, that this unity of primordial

[1] *Thomé's Structural and Physiological Botany, Ch. VI, p. 257.*

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matter as common Subject is powerfully confirmed, and strikingly illustrated, by the fact that out of the same portion of matter are successively evolved in orderly succession all the specific Forms which, in the actual constitution of things, are capable of being evolved out of matter from inanimate to the highest Forms of purely animal life?

NOTE.

The quotations from St. Thomas and Aristotle evince, that according to Peripatetic teaching there are not only provisional Forms which direct the evolution of the Subject from one kingdom into another; but that, within the limits of each kingdom, there are progressive provisional Forms or acts of one and the same Subject, which carry on matter from lower to higher grades of organization. This is the meaning of the Philosopher, when he tells us that first a thing is *animal*, then *horse*.

ARTICLE V.

The causality of the substantial bodily Form.

In pursuance of the order that has been already adopted in the discussions concerning the material cause, it now follows to institute an inquiry into the causality of these substantial Forms which determine the essential nature of bodies. Here, at the outset of certain inquisitions more purely metaphysical, it will not be inopportune to present the reader with a scientific description, (for a true *definition* of the essential constituent of a Category is impossible), of the substantial Form now under consideration. It is borrowed from Suarez. A substantial bodily Form, then, is *a simple and incomplete substance which, as the act of matter, constitutes together with the matter the integral essence of the composite substance.* It will be perceived that *substance* takes the place of a genus; for though, by reason of its being an incomplete entity in its own essence, the substantial bodily Form is excluded from a direct place in the Categories, it still belongs by reduction to the Category of Substance. By this *quasi*-genus it is distinguished from all accidental Forms of whatever kind. By the term *simple* it is distinguished more particularly from composite substance; by *incomplete*, from purely spiritual and subsistent Forms. The rest of the description distinguishes such Forms from the matter.

In the logical distribution of the present Article, the division adopted by Suarez will be followed; though here, as elsewhere, the

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writer feels himself compelled, however reluctantly, to dissent from not a few conclusions of this famed philosopher, as will be seen in their place. There are four questions that relate to the causality of the substantial Form. The first regards *the formal principiant of its causality;* the second, *the necessary conditions of* such causality; the third, *its nature;* the last, *its effects.* It will be found that the Propositions in the preceding Chapter touching the causality of matter will justify a considerable abbreviation in the treatment of those which have now to follow. The reader is invited to cast his eye back on the former, before commencing his study of the latter.

NOTE.

In the present Article, as before, the human soul is excluded from the inquiry, unless directly referred to. We are now dealing with *purely* material and *not-subsistent* Forms,—that is to say, with Forms that are in no sense spiritual and have no independent subsistence.

§ 1.

The formal principiant of the causality of the substantial Form.

PROPOSITION CXCVI.

The formal principiant of the causality of the substantial Form is the nature of the Form itself.

PROLEGOMENON.

By *the formal principiant* is to be understood *that something,*—whether essential part, faculty, quality, or, it may be, mere accident,—which in any given entity is the direct, immediate, cause of the effect which is its correlative. Thus,—to take an illustration,—the formal principiant in man of an act of seeing is not his faculty of growth and of assimilation, or his intellect, or his will, or his eye, but his psychical sense of sight. In like manner, the formal active principiant in the fecundation of the germ-cell of a plant is not the corolla, or the bracts, or the calyx, or even the stamen, but the pollen. The question, then, which awaits determination is this: By what something or other does the Formal Cause produce its effect in, or exercise its causality on, the matter?

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THE PROPOSITION IS PROVED AS FOLLOWS:

I. That which immediately and absolutely of itself causes an effect, is the formal principiant of such causality. But the nature of the substantial Form immediately and absolutely of itself causes the effect. Therefore, etc. The *Major* is evident. The *Minor* is thus declared. The effect of the causality of the substantial Form of bodies, (as we shall see afterwards), is the information of the matter and the constitution of the composite. But the Form according to its essential nature is the act of matter in such wise that, as the Angelic Doctor repeatedly monishes, it is not so much an entity itself, as that by which another entity (that is to say, the composite) is constituted. It has no independent existence. By the mere fact that it is, it actuates or informs matter. It is educed out of the potentiality of the matter; and so educed that, for so long as it exists, it essentially exists as the Form of matter. But the actuation of matter and the constitution of the composite are really one and the same thing, considered from two different points of view. Again: If it should be urged that the formal principiant of such causality is a certain aptitude or propension of the Form for such causation,—the like to which exists in the created human soul,—the position is freely granted. It only adds fresh cogency to the proof; since that aptitude or propension is of the essential nature of the Form.

II. The above argument is confirmed from the nature of the so-called union between the matter and the Form. For this union is immediate; that is to say, it is effected without the intervention of any accident or mode, because it is a union of information. This last proposition needs a little explanation. When there are two incomplete entities in the same Category, mutually proportioned, and mutually dependent, and essentially necessary to the existence each of the other, there is no need of the intervention of some third entity for the immediate union of the two; because there is inevitably a natural aptitude in the nature of both, which of itself suffices for their conjunction. But nature makes nothing in vain. In fact, there is no union in the ordinary meaning of the term;—that is to say, there is no conjunction between two entities that previously in order of nature (for of time there is no question) existed separate. Their separate existence is a metaphysical impossibility. Hence, if the term *union* is to be used at all, it cannot

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accurately be called an *act*, but a *state*, of union. By its very essence, if the Form exists at all, it exists as act of the matter and wholly dependent upon the latter for its continued subsistence. Herein is to be seen the proportion and natural bond of union between the two; for the one is a pure passive potentiality, while the other is simply and exclusively the act of the former.

§ 2.

The conditions of the causality of the Form.

PROPOSITION CXCVII.

The actual existence of the Form cannot be included among the necessary conditions of its causality.

Prolegomenon.

The denominative, *actual*, has been prefixed to *existence*, in order to avoid any possible equivocation; for there is notional existence, as there is notional essence.

Declaration of the Proposition.

Whether the question here mooted should be resolved according to the opinion touching the nature of the distinction between actual essence and existence in the instance of finite being defended by the majority of the older School of Thomists, or in accordance with the opinion maintained in the second Book of this Work; the truth of the present Proposition can be equally established. Whether it be a real major distinction,—as many Thomists assert, —or a real minor distinction,—as Soto and (some judge) Scotus and his School teach,—or a distinction *ex natura rei*, yet not real,—as Fonseca seems to understand it,—matters little to the present inquiry. In any case, if there be a real distinction between actual essence and existence; the existence of the composite and, therefore, of the Form, will be the result of formal causality. The reason is, that the actual essence of the entity, in this hypothesis, is in order of nature prior to its existence; and, accordingly, the latter is dependent on the former. But the actual essence is constituted by the actuation of the matter,—that is to say, by the information, or causality, of the Form. Therefore, the causality of the Form is prior in order of nature to the existence of the composite. If so, the existence of the Form,—which is essentially included in that of the composite,—cannot possibly be a condition

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of the causality of the Form. On the contrary, it must be an effect (strangely as this sounds) of the causality of the Form; which causality may be explained either as a formal causality, (if existence is the ultimate intrinsic mode of actual essence), or, (if the existence is supposed to emanate from the actual essence), as an efficient causality, or, (if the existence is in any other way entitatively distinct from the actual essence), as a material causality, inasmuch as the causality of the Form constitutes the actual essence which is the Subject of existence.

If, on the other hand, the opinion maintained in this Work be the correct one, the truth of the Proposition is equally certain. For that cannot be considered as a mere condition of causality, which is essentially included in the nature of the causal act itself; since a mere condition is outside the essence. But a substantial Form causes necessarily in virtue of its own actual entity; therefore, as existing. How, indeed, can anything energize, unless itself be actual? As the Philosopher justly remarks; 'How could things that do not exist talk or think[1]?'

NOTE.

There is an interesting Scholastic question, suggested by this last Proposition, which serves to illustrate the nature of formal causality. The question is this: Can it be allowed that the Form is in any way prior to its causality? In answer: It is certain, first of all, that there cannot possibly be any priority in order of time; for the causality of the Form, as we have already more than once seen, is altogether synchronous with its existence. It is at the first educed from the matter, as essentially dependent on the matter. The discussion turns, of course, upon Forms that are purely material; though, as regards the simultaneousness of existence and causality, the above conclusion applies equally to the human soul. Secondly: There is no priority of nature on the part of the Form relatively to its causality, in the sense that there is any *conceivable* interval between the existence of the Form and its information of the matter. Moreover, in rigour of speech, there is no priority of nature in such sense as that the causality should depend on the existing Form, but that the existing Form should not depend on its causality; for there is a mutual dependence. It exists in causing; and it causes in existing. Still,

[1] τὰ δὲ μὴ ὄντα πῶς ἂν φθέγξαιτο ἢ νοήσειεν; *Metaph. L. III, c. 4, v. f.*

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it cannot be denied that the Form may legitimately claim a sort of priority of nature; since there is a conceptual dependence of the causality on the Form, which the latter does not exhibit in relation to the former. This priority, for want of a better word, may be called a priority of *derivation;* and is called by the School a priority *a quo*, to distinguish it from that other proper intrinsic priority of nature, which is called a priority *in quo*.

PROPOSITION CXCVIII.

Intimate nearness of the substantial Form to the matter is not a condition of the causality of the former.

Declaration of the Proposition.

The present Thesis is directed against the opinion of Suarez, who places this intimate propinquity of the Form to the matter among the necessary conditions of formal causality. The only argument that he offers in favour of his proposition is this: The union of the Form with the matter is really distinct from the local presence of the Form, yet necessarily postulates such presence; so that without it the said union could not be effected, even *de potentia absoluta*. But the union of the Form with the matter is the causality of the Form. Therefore, the local propinquity of the Form is not its causality, but a necessary condition. Now, it cannot be denied that in all instances of union properly so called the local propinquity of the two entities is one thing, and their union another. It must further be admitted that the union of two distinct and essentially complete entities postulates, as a necessary condition, an intimate local nearness between the two. To illustrate both these statements by an example: There may be an intimate collocation of oxygen and hydrogen in due proportion; yet no union, or chemical combination. On the other hand, without such intimate collocation the chemical union would be impossible. But there are two grave demurrers to the argument of Suarez as applied to the present case. The one is, that,—to repeat what has been already insisted on,—there is no union, properly so called, of the Form with the matter; for union can only take place between entities that are capable of existing apart in order of nature. But neither Form nor primordial matter is capable of a separate existence in order of nature. Therefore, there cannot be any union properly so called between them. The *Major*

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is plain; for union connotes natural separability. Hence, in the dictionaries union is explained to mean 'The act of joining two or more things, and thus forming a compound body or a mixture,'—its active signification;—'or the junction or coalition of things thus united[1],'—its passive signification, equivalent to *the state of being united*. The *Minor* is admitted by Suarez, as we shall see later on; and is the unanimous opinion of the School, whatever difference of opinion there may be touching the greater or less entity of matter. Again: There is a second, (as it would seem), fatal objection to this argument of Suarez. He introduces local presence previous to the production of Substance. For, if he claims local presence as a necessary condition of the union of Form with matter, that local presence must be prior in order of nature to the union. But *place*,—and, therefore, local presence,—is an accident; and accident cannot be prior in order of nature to substance, since the latter is at once Subject and source of the former.

The above animadversions have prepared the reader for the proof which is now offered of the present Proposition. That cannot be a mere condition of causality, which is essentially included in the very nature of the causality itself. But the presence of the Form with the matter is essentially included in the very nature of the causality of the Form. Therefore, etc. The *Major* is evident. The *Minor* is thus declared. The causality of the Form is not, strictly speaking, the union of the Form with the matter, but the actuation of the matter by the Form; as will be shown in a later Thesis. Now, this information virtually contains in its concept that the Form is educed out of the matter; that it is essentially dependent on the matter for its first existence as well as for its continuance in being; and, finally, that it is the act of matter. But these three elements equally connote the local presence of the Form with the matter, as an integral part or at least accompanying property of the formal causation. For, in the act of being, (or as one might put it for the sake of clearness, *in fieri*), a thing must necessarily be present with that out of which it is evolved. *In facto esse*, that which is entitatively so supported in its existence by another entity in the same integral composite that without such other it could not possibly exist, must essentially be present with the other constituent of the same composite. Thirdly: That which is the act of a pure

[1] *Dr. Ogilvie's Dictionary.*

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passive potentiality must of necessity be intimately present with the potentiality of which it is the act. This is verified even in the instance of an active potentiality which within the limits of its own nature is a complete entity and, accordingly, is arranged under the Category of Quality. For when the intellectual faculty is actuated by a thought, who would conceive it to be a mere previous condition and not rather an inevitable necessity, that the thought should be in intimate propinquity to the mind? *À fortiori* is this verified in the instance of a purely passive potentiality; by how much this latter has far less of entity than an active potentiality, and is more absolutely dependent on its Form.

PROPOSITION CXCIX.

The dispositions of the matter, more especially those that are quantitative, are a necessary condition of the actual causality of the substantial Form.

This Proposition, as will easily be seen, consists of two Members.

I. The First Member, in which it is declared that *the dispositions of the matter are a necessary condition of the actual causality of the substantial Form*, is thus proved.

That which is necessary in order that the matter may be duly proportioned to the Form, is a necessary condition of the actual causality of such Form. But the dispositions of the matter, (as the very name suggests), are necessary in order that the matter may be duly proportioned to the Form. Therefore, etc. The *Major* is universally admitted; for, since matter is of itself indifferent to the reception of one Form more than of another, being indifferently receptive of all; unless it were duly proportioned for its actuation by this particular Form, there would be no sufficient reason why it should evolve this particular Form rather than any other. The *Minor* is equally plain; and is a fact of universal experience in natural generation. It would be impossible that the matter contained in a seed should be determined to the evolution of the vegetable Form, unless it were first of all organized after a definite manner in the embryo, and received further alterations from the soil, water, etc., that surround it, by means of which the seed is eventually corrupted and the matter enabled to evolve the plant-Form. This, in fact, is one principal reason for the *natural* necessity of a generating agent.

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II. THE SECOND MEMBER, wherein it is asserted that *quantitative dispositions more especially are a necessary condition of the actual causality of the substantial Form,* is thus proved. Those dispositions which are necessary for the portioning of the matter are in a special manner a necessary condition of the actual causality of the Form. But quantitative dispositions are absolutely necessary for the portioning of matter. Therefore, etc. The *Major* is evident. The *Minor* is thus declared. Unless matter were portioned off, previously in one way or another to its information by this particular Form, there would be no reason why the whole of matter should not be actuated by such single Form; and thus there would be but one material substance. If, moreover, that substance should be corrupted and a new generation take place; again would there be only one material substance, unless you presuppose a quantitative division. Neither can it be urged in reply to this argument, that the qualitative dispositions would suffice for the apportionment of the matter. For the said qualities would dispose the whole of the matter; since there could exist no reason why they should limit themselves to one portion of matter more than another; seeing that there is no apportionment to choose from. They, therefore, themselves require the previous dispositions of quantity as much as the substantial Form. Nay, in a sense they may be said to require it more. For qualities immediately inhere in quantity as their proximate, and only mediately in the composite as their adequate, Subject; whereas the substantial Form immediately inheres in the matter.

DIFFICULTY.

The Enunciation of the present Proposition is in manifest contradiction with the declaration of the one immediately before it. For, in the latter it was objected against the teaching of Suarez, that it presupposes the accident of place as a necessary condition of the constitution of substance; whereas all accidents are posterior in order of nature to substance which is their common Subject. But in the present Thesis quantity and quality are asserted to be necessary conditions of the actual causality of the substantial Form and, consequently, of the constitution of material substance. There is, therefore, a manifest contradiction between the two.

ANSWER. The objection here proposed is a grave difficulty, and includes questions connected with the genesis of material substance,

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which demand a full solution here or elsewhere. Consequently, even at the risk of a partial repetition, it will be necessary to go fully into the points mooted in this objection; for, till they are settled, we shall be left in doubt whether matter can in any way be proportioned to, or disposed for, any particular Form. Wherefore, let us proceed at once to a thorough consideration of the difficulty, evolving the answer step by step.

At the outset it is to be remarked, that there is a wide difference between the accident which Suarez claims as one of the necessary conditions of the causality of the substantial Form and the accidents that are claimed as conditions in the present Proposition. Local presence (*Ubi*) is an intrinsic accidental mode of substance, and—as a mode—has no entity whatsoever outside its Subject; so that its separation from the Subject is a metaphysical impossibility. It, therefore, presupposes necessarily such Subject as already completely constituted in its essential nature and outside its causes,—that is to say, existent. Moreover, as its name implies, it includes a transcendental relation to some other contiguous body by which its Subject is circumscribed. Consequently, it postulates as a necessary condition of its existence the prior existence of the material substance located, and it postulates also the co-existence of at least one other body as term of its transcendental relation. Neither can it be pretended that we are in presence of two substances, viz. the matter and the Form; and that the Form is itself informed by the intrinsic mode, while the matter is term of its transcendental relation. For it is sufficiently plain, when two unsubsistent entities are substantially incomplete and are mutually necessary to the existence of the other, that the first and only mode of which each independently is capable is the substantial mode of information. On the contrary, quantity and quality are no mere modes of substance, but proper accidents; and, accordingly, *de potentia absoluta* can exist without their Subject, though not without a necessary proclivity for it. Moreover, neither of them includes a transcendental relation to something other than the Subject which it informs. Lastly: Quantity in particular, (and quantity carries the qualities with it), has such an affinity with matter in various respects, that not a few Doctors of the School have considered matter to be its immediate Subject, and the Form to be Subject only by a sort of concomitancy. Hence, there is obviously a wide distinction between the two cases. Nevertheless, though the apparent contradiction has been somewhat modified

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by the above preliminary distinction, it has not yet disappeared. The reason assigned for rejecting the opinion of Suarez was *generally*, that no accident can become a necessary condition of the constitution of its own Subject. Then, apart from the question of a supposed contradiction between the two Theses, how is it possible that any accidents of a given substance can ever be conditions of its primordial constitution? Wherefore,

i. To clear the way:—There is no question of priority of time, at least necessarily, in the mutual relation of substance and accident. This is the starting-point; for it is quite clear that the problem turns upon a priority of some sort that substance claims over accident. It has been already pointed out in the *hundred and eighty-fourth* Proposition, that the respective quantity and qualities of each primordial element were concreated with the element itself in accordance with the accidental nature of each. In natural generation the quantity and qualitative properties are, *after a manner*, generated synchronously with the generation of the new substance. There is this vital difference, however, in this respect among others between the creation of the elements and natural generation, viz. that these accidents in creation do not virtually pre-exist; whereas in natural generation they do virtually pre-exist in the corrupted substance, while receiving their existence from the new Form.

ii. It is quite plain that the priority, which lies at the foundation of the present difficulty, is not a mere priority of order; because mere priority of order does not connote dependence, whereas accident includes an essential dependence upon substance.

iii. There is a certain priority of nature which substance essentially vindicates to itself over accident; and it remains to be seen whether this priority is of such a nature as to exclude the possibility of quantity and quality becoming conditions of the causality of the substantial Form. Here is the root of the difficulty. On the one hand, it is certain that every accident presupposes its Subject as constituted according to its specific nature and, consequently, quantity and quality presuppose their Subject thus constituted; on the other hand, matter must be portioned, proportioned, and disposed by quantity and quality for the evolution of such or such a particular Form. It is important, then, to bear in mind, first of all, that quantity is (so to say) a generic and undifferential accident. In this respect, as in others, it bears a very striking resemblance to primordial matter; so much so, indeed, that it may be fairly called

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a sort of primordial matter for the rest of the accidents. Similarly, there are certain generic qualities, as it were, which virtually belong to all bodies,—such as figure, weight, colour, etc. These are, therefore, invariable accompaniments of quantity. Quantity, then, is an essential property of all bodies, existing indifferently in one as in another. It is true that its limits vary; but limit, figure, etc., are modifications of quantity, that find their place in the Category of Quality. It follows, as St. Thomas teaches, that quantity depends upon that primary and fundamental Form which is virtually contained in all material substantial Forms,—to wit, the body-Form; and this Form may consequently be called generic, since all actual Forms are, as it were, its specific determinations. Wherefore, looking at the question metaphysically, quantity is at once the accident of the body-Form,—or rather, of *body* as the primordial composite substance virtually contained, as a sort of genus, in the elements themselves and in all subsequent compound substances,—and the necessary condition of the causality of all other substantial Forms. But, since quantity requires actuation by qualitative Forms, as primordial matter by substantial Forms; it follows that certain generic or indeterminate qualities should in like manner be accidents of the body-Form and conditions of the causality of all other actual substantial Forms. And now to descend to particulars:—It is very much to be doubted whether the primordial elements, according to the exigency of their nature, required for their creation any dispositions in the matter beyond its quantitative apportionment concreated with each element; for the quantity would in each case be informed by those primary properties of each element, that accompanied its creation,—so many actual determinations of the generic qualities which follow the body-Form. The dispositions necessary for the evolution of the Forms of compound bodies are to be found partly in such as are introduced in the matter by an external agency,—such, for instance, as that of the electric spark,—partly by attraction and affinity and other accidents existing in the component elements. In the natural generation of living entities, certain qualitative accidents, (for the quantity in the matter has been already determined in the corrupted substance), dispose the matter either for the eduction or introduction of the new Form, as the case may be, and consequently for the constitution of the new composite. Wherefore, all the accidents in the corrupted substance that are homogeneous with the new Form remain essentially (or as

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regards their essence) in the newly generated substance; no longer, however, as dispositions but as proper accidents, since they receive a new actuation and existence from the new Form. The newly generated Form leads captive the subjacent matter and, together with it, the accidents that it finds there. Those that are heterogeneous it exiles, while the dispository and other friendly accidents it accepts as its own subjects, but gives to them a new entitative existence under its own sway. It is in such wise that quantity and certain qualities may be really and truly conditions necessary to the causality of the substantial Form, and yet as accidents retain the true nature of their dependence upon substance.

§ 3.

The nature of the causality of the substantial Form.

PROPOSITION CC.

There is a metaphysical distinction between the entity and the causality of the substantial Form.

Prolegomenon.

In the Enunciation of the Thesis it is said that there is a *metaphysical* distinction, in order at once to claim for the conceived distinction a certain foundation of reality and at the same time to exclude anything like a physical distinction. The Thesis, therefore, virtually contains two Members,—viz. that there is a metaphysical, and that there is not a physical, distinction existing between the bodily Form and its causality.

By a physical distinction is to be understood (as we have seen before) a real distinction, such that there is a natural possibility of separating one from the other, so that one at least of the two is capable of existing without the other. Metaphysical distinction, on the other hand, is conceptual yet based on a reality, or real yet in such wise that neither is physically capable of existing without the other. The reader will do well to consult the Article on Distinctions, Book iii, ch. ii.

I. The First Member asserts that *there is a metaphysical distinction between the substantial bodily Form and its causality.* First of all it is plain that, if (as will be proved in the second Member)

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there is no physical distinction between the two, the distinction must be conceptual, since there is no middle term; always supposing that there is a distinction of some sort, about which in the present instance there cannot be a doubt. The only remaining question, therefore, is, whether this conceptual distinction is *rationis ratiocinantis* or *rationis ratiocinatae;* in other words, whether the distinction is exclusively a creation of the mind, or whether a real foundation for the concept is discoverable. The Thesis maintains that this latter is the case; and the assertion is thus proved. A distinction which is due to the perfection of the object distinguished, by virtue of which it is equivalent to two realities really distinct in other entities, is a metaphysical distinction. But such is the distinction between the bodily Form and its causality. Therefore, etc. The *Major* is evident; for it is a definition. The *Minor* is thus declared. In other finite entities there is a real distinction between the principiant of action, or of causality, and the causality itself; so that the principiant,—at the least *de potentia absoluta*,—can exist, and does often exist, without its causal action. In the substantial Form these two are one by reason of the perfection of its entity. Again: If considered in the light of an imperfection, (and that it admits of being so considered, will be explained under the second Member); such imperfection is the foundation of another species of metaphysical distinction, about which,—as about the former,—the Article referred to in the Prolegomenon gives a detailed explanation. Again: In the human soul, which is a substantial bodily Form, the two are seen to be actually separated; since the soul exists after death and, nevertheless, ceases to inform the body.

II. The Second Member of the Thesis declares that *there is no physical distinction between the bodily Form and its causality*. A distinction between two entities, neither of which can be separated from the other either in the order of nature or *de potentia absoluta*, is not a real distinction. But the substantial bodily Form neither in order of nature nor *de potentia absoluta* can be separated from its causality or the causality from the Form. Therefore, there is no real distinction between them. The *Major* is indisputable. The *Minor* has been sufficiently established in former Propositions. For it has been shown that these bodily Forms, (with the solitary exception signalized at the beginning of the Article), depend upon the matter for their eduction and support; so that the commencement and continuance of their existence depend upon their actually

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informing the matter. Consequently, it is impossible to separate the Form from its causality; for the same moment that it ceases to be causal, it ceases to be. Its causality is what may be analogically called the material part of its essence, the specific determination of its causality supplying (as it were) the place of a Form. This virtual identity of the Form with its causality owes its origin to the imperfection of its substantial entity; as the above declaration of the *Minor* must have made sufficiently apparent. It is in this sense that the distinction in question may be said to be founded on the imperfection of the Form. Hence, compared with the human soul, or even, after a manner, with accidental Forms, the substantial bodily Form is conceptually distinguished from its causality rather according to this second species of metaphysical distinction. On the other hand, forasmuch as it is identified with its own essential operation or causal action, it is a more simple act than are principiants that are separable from such action; and, considered in this light, the foundation for the distinction between it and its causality is a perfection indicative of a more absolute unity.

Difficulty.

Against the proof of the second Member it is objected as follows. It would appear that *de potentia absoluta*,—that is to say, by the Omnipotence of God,—the substantial Form could be preserved in being without its actual causality,—in other words, without its informing matter. Therefore, there is a real distinction between the two. The *Antecedent* is proved by two arguments. First of all, in the human soul there is an actual separation. But, so far as the information of the matter is concerned, the human soul stands on a par with all other bodily Forms. Consequently, these latter are separable *de potentia absoluta*. Secondly, quantity can be preserved in being, apart from matter *de potentia absoluta*, as all the Doctors of the School allow. Therefore, *à fortiori* the substantial Form. Such is the argument of Suarez, who maintains that there is a real distinction between the bodily Form and its causality. Fonseca goes so far as to say that 'no Catholic philosopher doubts but that all Forms without exception can be preserved by the Power of God without a Subject[1].'

[1] 'Neque ullus Catholicus Philosophus ambigit, quin formae absolute omnes divina potestate sine subjecto cohaerere in rerum natura possint.' *In Metaph. Arist. L. V, Cap. 2, Q. 4, § 1., v. f.*

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ANSWER. The *Antecedent* is denied. It is not possible for God to preserve the substantial bodily Form in being, apart from the matter; because it is a metaphysical impossibility. As to the two proofs of the *Antecedent*, they are arguments *à pari*; and the parity is denied. The assertion of Fonseca may be neglected; since it is unsupported either by extrinsic authority or intrinsic reasons of any kind.

Such in summary is the formal answer to the objection. But it would ill become the respect due to so weighty an authority as that of Suarez, were the question in dispute to be thus prematurely brought to a close. It may fairly be expected that reasons should be given in support of the assertion that there is no parity, where such a philosopher as Suarez thinks to have discovered a parity. The scope of the present Work will explain why recourse is had to the authority of St. Thomas. Independently, however, of this motive, it will be seen that arguments which conclusively establish the truth of the answer given, are to be found in his teaching with regard to this subject. Wherefore,

i. St. Thomas teaches that these substantial Forms have no being of themselves, but that their sole function is to constitute the composite in being by actuating the matter. This has been already shown to be his teaching from his own words in former Propositions; nevertheless, let the following quotation be added by way of complement. 'Other Forms,' he writes, in contrasting these with the human soul, 'are not subsistent. Hence, they have no being, but by means of them some things' (to wit, the composites) 'exist. Wherefore, they are made in this sense, viz. that the matter, or Subject, is reduced from potentiality to act[1].' We shall see that he repeats the same doctrine in another passage which will be quoted presently under another heading. Here, then, we are provided with certain premisses which conduct us straight to the conclusion included in the above answer. First of all, if these Forms have no being in themselves by virtue of their very nature; to preserve them in existence apart from their Subject, is a contradiction in terms, for they have no being of their own to preserve. To say, therefore, that they can be so preserved *de potentia absoluta*,

[1] 'Aliae formae non sunt subsistentes; unde esse non est earum, sed eis aliqua sunt. Unde fieri earum est secundum quod materia vel subjectum reducitur de potentia in actum.' *Spiritu. a.* 2, 8[m].

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is tantamount to saying that God can make a thing which has essentially no being of its own to have being of its own, and that which is essentially incapable of subsistence to subsist. Moreover, if all its being is in the being of the composite; to say that God can preserve its being outside the composite, is equivalent to saying that God can cause a thing to be independently of that which is essential to its being. Lastly, if these Forms are essentially nothing more or less than acts of matter on which they are essentially dependent; to affirm the possibility of their existence apart from matter, is the same as to admit that an essentially material act could exist as not a material act. But all these are so many contradictions in terms.

ii. It is the teaching of St. Thomas that these substantial Forms cannot exercise their natural operation apart from matter. Yet elsewhere he teaches that an entity necessarily exercises its natural operation, as soon as it begins to be. Thus, pursuing the same contrast between the human soul and other material Forms, he writes as follows in another place: 'The rational soul differs from all other' material 'Forms in this; viz. that it does not comport with the other Forms to have a being in which they can themselves subsist, but a being by virtue of which entities formed by them may subsist. On the other hand, the rational soul possesses being in such sort as to subsist in it. And this is set forth in the diversity of action. For since nothing can act unless it exists; every entity bears the same relation to operation or action as it does to being. Wherefore, since the body necessarily takes part in the operation of the other Forms, but not in the operation of the human soul, which consists of thought and will; being is necessarily attributed to the human soul as to a subsisting entity, but not to the other Forms. Hence it is, that among these Forms the rational soul alone exists separate from the body. Thus, then, it appears that the rational soul comes forth into being in a different way from the other Forms, which do not admit of being made in the proper sense of the word, but are said to be made by something having been made[1],'—that is to say, the composite. Elsewhere he

[1] 'Rationalis anima in hoc a ceteris formis differt, quod aliis formis non competit esse in quo ipsae subsistant, sed quo eis res formatae subsistant; anima vero rationalis sic habet esse ut in eo subsistens. Et hoc declarat diversus modus agendi. Cum enim agere non possit nisi quod est, unumquodque hoc modo se habet ad operandum vel agendum, quomodo se habet ad esse. Unde, cum in operatione aliarum formarum

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says, 'Natural Forms, immediately upon their existence in matter, are in possession of'—exercise—'their natural operations; unless there should be some impediment. The reason of this is, that a natural Form is determined to one act only[1].' In this passage the Angelic Doctor repeats in yet clearer terms that these Forms have no being in themselves. It is important to examine the argument by which he arrives at his conclusion. This it is in substance. The nature of the being of a thing is discernible in its natural operation. Now, all these substantial Forms, with the single exception of the human soul, can only exercise their natural operation with the assistance of matter. Hence, they have no being save in matter. This is the reason, adds St. Thomas, why of all these Forms the human soul alone exists in a state of separation from matter. Is it not evident, then,—is it not a simple corollary from his teaching,—that, in the judgment of the Angelic Doctor, these Forms cannot exist separate from matter, because they cannot, although otherwise unhindered, exercise their natural operations in such state of separation? Hence, the conclusion: If one of these Forms could *de potentia absoluta* be preserved separate from matter; then, one of two things. Either an entity can exist without its natural operation, albeit unhindered; or an entity that is essentially incapable of its natural operation without the help of matter can preserve its natural operation apart from matter. But each one of these hypotheses involves a metaphysical impossibility.

iii. The concluding words of the last quotation but one supply us with an additional argument. The Angelic Doctor there declares that these Forms cannot be properly said to be made; but that one may affirm them to be made in that composite which themselves constitute by their actuation of the matter. Accordingly, in the *hundred and seventy-seventh* Proposition it has been shown from the teaching of the same Doctor, that it is a metaphysical impossibility for these Forms to become the single or adequate term of either

necesse sit communicare corpus, non autem in operatione rationalis animae, quae est intelligere et velle; necesse est ipsi rationali animae esse attribui quasi rei subsistenti, non autem aliis formis. Et ex hoc est quod inter formas sola rationalis anima a corpore separatur. Ex hoc ergo patet quod anima rationalis exit in esse, non sicut formae aliae, quibus proprie non convenit fieri, sed dicuntur fieri facto quodam.' *Pot. Q.* iii, *a.* 9, *c. in m.*

[1] 'Formae naturales, statim ut sunt in materia, habent operationes suas, nisi sit aliquod impedimentum; quod ideo est, quia forma naturalis non se habet nisi ad unum.' *Anima, a.* 18, 5[m].

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creative or productive action. Wherefore, as we are told by the same authority, in the elements they were concreated with the matter. In other words, the composite was the adequate term of the creative Act. Hence, another argument, which seems irrefragable, in favour of the present contention. The conservative action of God, by which He preserves creatures in being, is a continuation of the Act creative or productive, as the case may be. This no philosopher has called in question. If, then, God could preserve these Forms in existence apart from matter; it would follow that He could do in the Act of conservation that which is a metaphysical impossibility in the Act of creation or production. This, again, is a contradiction in terms.

iv. According to the teaching of the Angelic Doctor, these substantial Forms are in their nature universal and receive their individuation from matter. But universals, as such, can have no existence save in the mind that conceives them. Hence, antecedently to the individuation of these bodily Forms in matter, they exist exclusively as exemplar Ideas in the Mind of God. The *Major* can be easily established. Thus, in one place St. Thomas writes: 'Forms that are capable of being received in matter are individuated by the matter. . . . But the Form, so far as its own nature is concerned, is capable of being received by many[1]' portions of matter. Again: 'A Form, so far as its nature goes, is universal[2].' Again: 'A Form of itself is universal[3].' In another place he says: 'It is to be observed, then, that a thing is said to be infinite, because it is not limited. Now, in a certain way both matter is limited by Form and Form by matter: matter by Form, because matter, previously to its receiving some one Form, is in potentiality to many Forms; but, when it has received one, it is limited by it,' —that is to say, it is determined to that one substantial Form and, for so long as it is so informed, can receive no other. 'Form is likewise limited by matter; forasmuch as Form, considered in its own nature, is common to many, but by being received in matter it becomes determinately the Form of *this* entity[4].' Yet again: 'A

[1] 'Formae quae sunt receptibiles in materia, individuantur per materiam.... Forma vero, quantum est de se . . . recipi potest a pluribus.' 1ae iii, 2, 3m.

[2] 'Forma autem, quantum est de se, sit universalis.' *in 4 d.* 1, *Q.* 1, *a.* 3, *c. init.*

[3] 'Omnis autem forma de se universalis est.' *Verit. Q.* ii, *a.* 5, *in m.; Q.* viii, 11, *c, p.m.; Q.* x, *a.* 5, *c, init.*

[4] 'Considerandum est igitur quod infinitum dicitur aliquid ex eo quod non est finitum: finitur autem quodammodo et materia per formam et forma per materiam.

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Form has the character of universality, in that it is capable of being received in many[1].' Once more: 'Every Form in its own nature is common. Hence, the addition of Form to Form cannot be the cause of individuation.' St. Thomas is here including accidental Forms, as will be seen, in his argument. 'For how many soever Forms may be heaped together,—as, for instance, *white*, *of two cubits' length*, *curly hair*, and such like,—they do not constitute a particular; because all these are together in one,'—that is to say, their unity of aggregation does not arise from any mutual subordination or dependence, since they are *together* merely,—'and are, therefore, capable of being found in many potentialities. But the individuation of the Form is due to the matter, by which the Form is contracted to this determinate entity[2].' Finally: In another passage where he explains his mind more fully he writes as follows. 'The nature of a material Form, (since of itself it cannot be this something'—that is, individual,—'specifically complete, whose being is alone incommunicable), is communicable, so far as regards its own nature; and is only incommunicable by reason of the supposit, which is something specifically complete. This, however, does not belong to every sort of Form. Wherefore, so far as regards its essential nature it is communicable, as has been said. Now, its communication consists, (as has been said), in its being received in other entities. Accordingly, so far as regards its essential nature it is communicable and can be received in many, and is received according to one essential nature; since the nature of a species is one in all the individuals belonging to it. But since itself has no being, because being belongs to a supposit only, (as the Philosopher plainly indicates in the seventh Book of his *Metaphysics*), and a supposit it is that is incommunicable, as we have said; therefore, the material Form is diversified according to a plurality of incom-

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Materia quidem per formam, inquantum materia, antequam recipiat formam, est in potentia ad multas formas; sed cum recipit unam, terminatur per illam. Forma vero finitur per materiam, inquantum forma in se considerata communis est ad multa; sed per hoc quod recipitur in materia, fit forma determinate hujus rei.' 1ae vii, 1, *c.*

[1] 'Forma rationem universalitatis habet ex hoc quod in pluribus est receptibilis.' 2 *d.* iii, *Q.* 1, *a.* 2, 2m.

[2] 'Omnis autem forma de se communis est. Unde additio formae ad formam non potest esse causa individuationis: quia quotcumque formae simul aggregentur, ut, album, bicubitum, et crispum, et hujusmodi, non constituunt universale, quia haec omnia simul sunt in uno, et ita in pluribus potentiis est possibile invenire. Sed individuatio formae est ex materia, per quam forma contrahitur ad hoc determinatum.' *Quol. L. VII, a.* 3, *c.*

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municable entities, while remaining one according to the nature communicated to many,'—that is to say, it becomes many Forms with individual differences by virtue of the composites wherein alone it can have being, but remains one according to that specific nature which it constitutes the same in each and all. 'Now, its reception is in matter, because itself is material. Hence it is plain that, by reason of its nature, a unity of essence is left to it, even when communicated; and that it is rendered incommunicable by its reception in matter. For from its being received in matter it is made individual (which is, incommunicable), and the primordial foundation in the Category of Substance[1].' This last passage shall complete the teaching of the Angelic Doctor on this head. The existence, then, of the material Form, antecedently to its eduction from the potentiality of the matter, is purely conceptual. It exists only as an Exemplar-Form in the Divine Mind; for, as St. Thomas teaches in this last quotation, in itself it has no being, but is a specific nature communicable to many and, as a consequence, not individual. Its individuality is in the concrete,—that is to say, in its actuation of the matter. Seeing, then, that of itself it is a universal, of itself it is not real but conceptual. But the concept is eminently real objectively; a reality it can only receive from the Divine Idea by Which such a definite grade in the imitability of the Divine Essence is cognized and represented in the Word. Physically, therefore, considered exclusively in itself, it is nothing; metaphysically considered, it is a species and, as such, communicable to many individuals according to the unity of one common nature. Itself,—to repeat this most pregnant part of St. Thomas'

[1] 'Natura enim formae materialis, cum ipsa non possit esse hoc aliquid completum in specie, cujus solum esse est incommunicabile, est communicabilis quantum est de ratione sua; sed est incommunicabilis solum ratione suppositi, quod est aliquid completum in specie, quod cuilibet formae non convenit, ut dictum est. . . . Ideo quantum est de ratione sua, communicabilis est, ut dictum est. Communicatio autem sua est, ut dictum est, per hoc quod recipitur in aliis. Ideo, quantum est de natura sua, communicabilis est, et in multis recipi potest, et recipitur secundum unam rationem, cum una sit ratio speciei in omnibus sui individuis. Sed quia ipsa esse non habet, ut dictum est, quia esse est solius suppositi, ut patet per Philosophum 7 Meta., et suppositum incommunicabile est, ut dictum est; ideo ipsa forma materialis diversificatur secundum multa esse incommunicabilia, manens una secundum rationem multis communicatam: sua autem receptio est in materia, quia ipsa materialis est. Ex quo patet quod de natura sua sibi relinquitur unitas rationis in communicatione sua, et quod redditur incommunicabilis per receptionem suam in materia. Ex quo enim recipitur in materia, efficitur individuum, quod est incommunicabile; et primum fundamentum in genere substantiae.' *Opusc. XXIX (aliter XXV), p. m.*

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teaching,—is not individual, but receives its individuality and, as a consequence, its existence from the matter which it actuates. By virtue of its existence in the matter it becomes so determined as to be individually differentiated;—that is to say, besides its specific nature which it communicates in common to each and all of the composites that it constitutes, it acquires particular notes in each, by which it is determined as *this* individual Form. Thus, for instance, the horse-Form gives to all horses that specific nature by which they are distinguished from animals of every other species; but, as evolved in this particular portion of matter, it existentially receives from matter certain individual characteristics by which *this* horse is distinguished from *that other* and every other. It is in such wise that even the human soul is subjected to hereditary dispositions.

From the above declarations we gather that, according to the mind of the Angelic Doctor, these substantial Forms apart from matter have no real existence. Hence, they are universals, which nothing existent can be. Hence, too, they are infinite, i.e. undetermined, and capable—as Exemplar Ideas—of being *intentionally* communicated to many. Their conjunction with matter, therefore, is essential to their individuation and actual physical existence. From the above premisses it follows that, if these Forms can *de potentia absoluta* be preserved in existence apart from matter, a universal could exist in nature,—that something essentially deprived of individuation could be individual,—that an existentially determined and, therefore, incommunicable Form could continue to exist as communicable to many,—that the individually limited could persevere in existence as unlimited. But all these hypotheses are self-contradictory and, as a consequence, involve a metaphysical impossibility.

An objection to the doctrine just exposed may possibly occur to the mind of some. It may be said: If it is metaphysically impossible that the substantial bodily Form should exist apart from matter; it seems to follow as a consequence that the Form is as imperfect an entity as primordial matter, since neither can exist without the other. But, if so, it is difficult to understand the strong expressions by which the philosophers have vied with one another in extolling the excellence of these Forms. We have seen that Aristotle declares Form to be 'something Divine and good and object of desire;' and Plato tells us that it is 'the image of true

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existences, a participated likeness of the Divine Nature, a sort of Divine offspring.' How can such expressions be reconciled with this professed imbecility of the Form? St. Thomas shall supply us with the foundation for an answer to this difficulty. 'Now, matter,' he tells us, is perfectioned by the Form by which it is determined; and therefore infinity'—indeterminateness,—'as attributed to matter, has the nature of an imperfection; for matter is *quasi*-matter without a Form. But the Form is not perfected by matter, but rather contracted in its extension. Hence, infinity'—indeterminateness,—'as applied to Form by virtue of its being undetermined by matter, has the nature of a perfection[1].' Wherefore,—to reduce our answer into logical shape,—first of all, it must be owned that there is a *physical* imperfection common to the substantial bodily Form and to the matter, in that neither of them can possibly exist apart from the other. Considering, therefore, the simple fact of necessary dependence exclusively, they are on a par in their imperfection. But, secondly, if we have regard to the *nature* of the dependence in each case, the superiority of the Form is at once made manifest. For matter depends upon Form as a passive potentiality on its act,—that is to say, as something which can hardly be called an entity to that which perfects it in its specific essence; whereas the Form depends upon the matter as the perfect upon the imperfect of which it is the perfection. Accordingly, the Form gives to matter its determined grade, its nature and natural operation, its likeness to the Divine Prototypal Idea. Matter, on the other hand, gives nothing to the Form but its individual notes and organs of operation;—and these only by virtue of the accidents which the Form has brought in its train. So far we have been looking at the contrast from a physical point of view. Now to look at it metaphysically:—The infinity,—that is to say, unboundedness,—of matter arises from the poverty of its being. It has no definiteness of its own; because it is an entirely indifferent passive potentiality. It has no essence, no nature (properly so called) of its own; but has a natural inclination towards some essential determination or other as towards its own perfection. Wherefore, any limitation of its unboundedness is its perfectionment; seeing that

[1] 'Materia autem perficitur per formam per quam finitur; et ideo infinitum secundum quod attribuitur materiae, habet rationem imperfecti; est enim quasi materia non habens formam. Forma autem non perficitur per materiam, sed magis per eam ejus amplitudo contrahitur. Unde infinitum, secundum quod se tenet ex parte formae non determinatae per materiam, habet rationem perfecti.' 1^ae^ vii, 1, *c.*

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'its infinity has the nature of an imperfection.' On the contrary, the infinity,—or illimitation,—of a bodily Form 'has the nature of a perfection.' Why? Because its illimitation means this: that it is a copy of the Divine Perfection in a specific grade; and that this likeness is fecund, so as to be capable of being communicated to any number of individuals. It is a prolific perfection. By individual limitation in matter nothing is added to the specific nature which the Form communicates; while its fecundity is in a sense diminished by its individual communication. It ceases to be prolific in proportion as it becomes actual. Such appears to be the meaning of St. Thomas in the passage quoted; and such is the solution of the difficulty proposed.

But Suarez proceeds to prove the possibility of the continued existence of these Forms apart from matter by his first argument *à pari*. The human soul,—to repeat his argument,—can exist in a state of separation from the body; for it does actually so exist. Therefore, we have an equal right to affirm that other substantial material Forms can so exist. The answer is, not only that the two cases are not parallel; but that precisely there where a sort of parallelism is discoverable, the evidence leads us to an exactly opposite conclusion. The two cases are not parallel, because the human soul is spiritual and subsistent. In that it is spiritual, it is so far forth independent of matter as to its natural operation; in that it has a subsistence of its own, it is not dependent on matter for its existence any more than for its beginning to exist. On the contrary, all other bodily Forms are material, dependent on matter for their natural operation, evolved out of matter, and having no subsistence save in matter. Hence, they are wholly material, and essentially dependent on matter for their subsistence and very existence. That there where a sort of parallelism is discoverable in the two cases, the evidence leads to an exactly opposite conclusion,—is thus declared. It is undoubted that the soul, as being a simple substance, is in its entirety substantially united to the body as the actuating Form. But, in order to discover the parallel of which we are in search, we must go to the potential, or facultative, conjunction between soul and body; and there we find two orders of faculties that are perfectly distinct. There are the higher or spiritual, and the lower or sensitive and vegetative, faculties. The former are independent of the body, and require no bodily organ. The latter are material, and can only energize in, and by means of, certain organs of the body.

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It is precisely these that are the properties of the soul as formally act of the body; because, as formally act of the body, the soul of man supplies the place of that vegetative and sensitive life which it includes virtually as well as eminently in itself. Here, then, if anywhere, we must look for a parallelism between it and the other material Forms. And what do we discover? That the vegetative and the sensitive life cease, so soon as the soul is separated from the body; and that the faculties proper to these can no longer energize, but remain potentially in the soul. In a word, they *so* cease to be that, if they were not contained virtually and eminently in a subsistent spiritual nature, they would *wholly* cease to be. Thus, then, the argument of Suarez, based upon the existence of the human soul after death, partly proves nothing from a defect of parity; partly, where the parity does hold, sustains in no slight degree the opposite position.

The second and last argument of Suarez is another argument *à pari;* and runs as follows. It is unanimously admitted by the Doctors of the School, that quantity can *de potentia absoluta* be preserved in a state of separation from matter. But, if this is possible in the instance of an accidental Form, there is at least equal reason for admitting the same possibility in the instance of a substantial bodily Form. For, as the substantial bodily Form is educed out of the potentiality of matter, so the accidental Form is educed out of the potentiality of the composite; and as the former is the substantial act of matter, so the latter is the accidental act of the composite. Since, then, there is a parity so far forth both in mode of origin and in dependence; it is reasonable to conclude that the possibility of existing in a state of separation from their respective Subjects will be the same. In the formal answer given to this difficulty at the commencement, the parity was again denied. In order to justify this answer, it will be necessary to anticipate briefly the doctrine,—to be afterwards explained at length,—touching the nature of quantity. For it is to be noted that the possibility of existence apart from its Subject is not claimed for every accident, but for quantity in particular. There is a just reason for this. Other accidents there are,—certain qualities,—which are capable *de potentia absoluta* of such separate existence in a way, and for reasons, that will greatly corroborate our present contention. Now, let us examine the two terms of comparison. The whole essence, function, *raison d'être*, of a substantial bodily Form is the information of matter and the constitution of the composite. It is

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the perfectness of matter,—that by which the essential nature of the composite is specifically determined;—that, and nothing more. But similar characteristics cannot be attributed to quantity. It is true that quantity is an accidental perfection of the integral composite; but it is something more. It assumes the nature, as it were, of a twofold entity; for it is at once, according to a difference of relation, an act and a potentiality. It is an act of material substance; but it is likewise a passive potentiality,—although, in the order of nature, together with the substance,—in its relation to qualities. Within the sphere of accidental entities it assumes the place of a sort of primordial matter,—itself indeterminate, imperfect, and having a natural inclination and aptitude for qualitative Forms without which it cannot exist. What would become of quantity in the world of material things, if it had no limits, no shape? Yet these are in the Category of Quality. Indeed, it would be hard to understand the existence of quantity, without colour, hardness or softness, and the like. Certainly, without these it could not be subject to sensile perception. Neither can it be justly objected that such actuation and perfectioning come to it from another Category; for such is likewise the case with the perfection which substance receives from quantity. Then again,—and this it is most important to notice,—quantity has no activity. It is like primordial matter in this respect again; whereas the bodily Form is primary source of the natural operation of the composite. Lastly: Quantity is not differentiated entitatively by the specific or individual nature of the composite which it informs. On the contrary, it is a generic property, attaching itself equally and indifferently to everything that can claim the name of body; and, although in substantial transformations it receives a new *existence*,—because all accidents without exception flow from the Subject which they inform,—nevertheless, it remains in *essence* the same that it was before. The bodily Form, on the other hand, has its own specific nature in the composite, by which it is distinguished from all Forms of other species, and moreover admits of individual differences in the composite, by which it is distinguished from other Forms included under the same species. For these three reasons it is possible that quantity should, and that the substantial Form should not, be capable *de potentia absoluta* of being preserved in existence apart from their respective Subjects. First: Since quantity has another office to fulfil besides that of informing the composite substance,

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and is a passive potentiality *absolutely* (though not according to the order of nature) reducible to act, apart from the causality of the composite substance; it has in itself a sufficient reason for its being, and its separate existence does not involve a metaphysical impossibility. Secondly: Because it is not the principiant of any natural operation,—not even by delegation from the substantial Form;—its separate existence does not connote, as it does in the instance of the substantial Form, the existence of an entity deprived of its natural operation. Lastly: The connection between quantity and the individual body is *essentially* so indeterminate,—because generic,—as to render the possibility of its separate existence *de potentia absoluta* less difficult of comprehension. The case is very different with qualitative accidents in general. They are pure Forms, actuating quantity immediately and mediately substance. Moreover, in many cases,—when they are not simple modes,—they have a delegated natural operation as instruments of the substantial Form. For this latter never acts immediately on other bodies; but uses qualities as the naturally necessary media of its action. Lastly: Qualities are differentiated according to the nature as well as the individuality of the substantial composite that they inform. Hence, (and it is an important confirmation of the position defended in the present Proposition), according to the Angelic Doctor it is impossible *de potentia absoluta* to preserve qualities in being, apart from quantity; or, if possible, the qualitative Forms in such case would lose their present nature and assume another accommodated to their new position. They are able, indeed, by an act of the Divine Omnipotence, to persevere in existence without inhesion in the substantial composite; but this capacity is, so to say, vicarious. Since they immediately inhere in quantity, and only inform the material substance through the medium of quantity; they follow the fortunes of the latter. If, therefore, quantity should continue to exist, though separated from the composite substance; so would the qualities that immediately inhere in such quantity. This, however, is the important point: It is metaphysically impossible that qualities should exist apart from some Subject, without changing their essential nature. Why? Because, in proportion to their accidental nature, they are pure acts with a natural, though subordinate, activity. But in these respects there is an apparent identity between them and substantial bodily Forms. Hence, the consideration of qualitative Forms serves to corroborate the truth of the present contention.

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There is one objection that may be made to the above answer, and it is this. An accident of its very nature connotes a Subject of inhesion; because it is not *being*, but *being of being*. It is thus distinguished from substance. If, then, an accident can exist *de potentia absoluta* independently of its Subject; much rather, as one would suppose, could a bodily substantial Form so exist. Answer: It is true that accident essentially connotes a Subject as object and term of its natural tendency, aptitude, indigency; and such tendency, aptitude, indigency, it can never lose, (as will be more fully explained in another Book). But it does not essentially connote a Subject of actual inhesion; for it is a complete entity in its own Category. On the contrary, the substantial Form of a body essentially connotes a Subject of actual inhesion; because it is incomplete in its own Category and needs completion for its existence and continuance.

PROPOSITION CCI.

The causality of the substantial bodily Form consists in the actual information of the matter.

Prolegomenon.

There is no controversy among the Doctors of the School touching the substantial truth of the present Proposition; although there is a difference in the method of expression. Suarez asserts this causality to consist in the actual *union* of the Form with the matter. For the reason already assigned, the term, *union*, has been avoided. It might with greater propriety be applied to the substantial constitution of man; since the human soul has a subsistence of its own independent of the composite, and is originally created. Yet, even in this case, the adoption of the word, *information*, seems preferable. For union, even though conceived as substantial or between two incomplete substances completive of each other within their own Category, does not necessarily,—or, at least, explicitly,—convey the idea of the reduction of a passive potentiality to act, and the elevation of the former by the latter to the perfection of a specific nature.

Declaration of the Thesis.

The truth of the Enunciation has been so clearly shown in the

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declarations of preceding Theses as to preclude the necessity of any further proof; the more so, that there is no other conceivable causality that may be assigned to the substantial Form.

§ 4.

The effects of formal causality.

PROPOSITION CCII.

The primary effect of the substantial bodily Form is the composite.

DECLARATION OF THE PROPOSITION.

That the composite is an effect of the causality of the substantial Form, does not admit of a doubt; since it receives from the Form its constitution, its specific nature, its proper operation, its beauty and excellence. It may not be so evident at first sight, that the composite is the *primary* effect of formal causality. This statement in the Enunciation is thus proved. That which answers to the final cause, or end, of any causality is the primary effect of such causality. But the composite is that alone which answers to the end of formal causality. Therefore, etc. The *Major* is evident. The *Minor* is thus declared. There are only two conceivable effects of the substantial bodily Form,—to wit, the matter and the composite. But the causality of the Form in relation to the matter is for the sake of the constitution of the composite and is, consequently, only a means towards the attainment of the end. Wherefore, it cannot be the primary effect of such causality.

DIFFICULTIES.

I. That effect which is first in order of nature is the primary effect of a cause. But in formal causality the information of the matter is prior in order of nature to the constitution of the composite. Therefore, the former, not the latter, is the primary effect of the Form.

ANSWER. Let the *Major* pass; since it is not necessary to introduce a distinction, in order to meet the present objection. The *Minor* is denied; since by one and the same causal act the Form actuates the matter and constitutes the composite.

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II. The composite cannot be an effect of the substantial Form in any way; which is thus proved. The cause is nobler than its effect. But the Form is not nobler than the composite: First, because the latter includes the Form and the matter besides; secondly, because the Form is an incomplete, the composite a complete, substance; thirdly, because the Form naturally desires conjunction with the matter,—needs it in order to exist. But this conjunction, as inclusive of the matter, is the composite.

ANSWER. The *Antecedent* is denied. Now for the proof: That *the cause is nobler than its effect*, must be distinguished;—always is nobler,—no; in the instance of some causes, as the efficient and final,—granted. The same *Major* would exclude matter also from being in any sense cause of the composite; the latter, therefore, would be a composite without composition.

PROPOSITION CCIII.

Matter depends upon the Form in such wise that it cannot naturally exist without the information of the Form.

PROLEGOMENON.

In this and the succeeding Theses which conclude the present Article, we are involved in a question that is a subject of considerable controversy in the Schools. Widely different opinions have been maintained touching the causality of the substantial Form in matter,—its reality, extent, and effect. It is the writer's misfortune that he is compelled on this question again to differ from the opinion of Suarez, who does not admit the causal dependence of matter on the Form. All the arguments, however, which this eminent philosopher has adduced against the doctrine here maintained, as well as those which he proffers in favour of his own theory, will be given and discussed under the difficulties subjoined to each Proposition. In the arrangement of the Propositions those points will be first established, about which there is a more general agreement; in order that we may be the better enabled, by the help of these previous conclusions, to confront those other points that have been more generally contested. Suarez admits the truth of the present Thesis.

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DECLARATION OF THE PROPOSITION.

Matter is essentially a mere passive potentiality, (as has been shown in the previous Chapter), having a natural disposition towards its act as (to say the least) completive of its perfection in its own Category; since without the Form it is an incomplete entity, —nay, the most incomplete of entities,—next to nothing. Therefore, by virtue of its nature it depends upon the Form. But it naturally depends upon the Form for its *existence*. For (i) a mere passive potentiality in the order of nature requires actuation as a condition of its existence. Why? Because it is a mere receptivity. But a mere receptivity is not in act, till it receives. Neither is it, —*physically*, at all events,—an act; for an act, *as* act, excludes potentiality. Furthermore: Because it is not an act, it is in potentiality to existence; because nothing that is not an act, or actual, can exist. If, then, it is in potentiality to existence; it cannot exist till it is actuated by the Form. Therefore, it depends upon the latter for its existence. (ii) If matter could exist without actuation by the Form, it would be wholly useless; and 'nature makes nothing in vain.' It is frivolous to urge that it would not be useless, because it would retain its essential tendency towards some Form as condition of its actuation. For how could such tendency make matter practically useful, so long as it was forcibly hindered from arriving at its term? (iii) It is not reasonable to suppose that matter should be less dependent on the substantial Form than on accidental Forms. Yet matter cannot naturally exist without the latter, more particularly without quantity. Therefore, it connaturally postulates actuation by the substantial Form in order that it may exist,—the more so, that the accidents are consequent upon the Form. (iv) That which always occurs in the same way among the things of nature may be safely said to be naturally necessary. But the information of matter by some substantial Form always occurs in the same way. Therefore, etc. The *Minor* is proved by experience; for there is no known exception to the rule. But, if it is naturally necessary to the existence of matter that it should be actuated by some substantial Form, matter depends upon such Form, in the ordering of nature, for its existence. (v) This last argument is confirmed by the universal law of alternate corruptions and generations. In no single instance does a corruption terminate, so to speak, in itself; but it invariably makes way for

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a new generation. Hence, matter from the first moment of creation has been always under the actuation of some substantial Form. But this is no feeble sign of a natural necessity.

Difficulty.

Primordial matter has a partial subsistence of its own. Therefore, it is not dependent on the Form for its existence.

Answer. It is true that matter has a partial subsistence in the composite,—that is to say, as actuated by the Form;—but, apart from the composite, it has neither partial subsistence nor existence nor entity. Besides, as Suarez acutely remarks, subsistence,—that is, the existence of a thing in itself without inherence in another,—excludes dependence on a Subject, but not dependence on an act, or Form.

PROPOSITION CCIV.

Such natural dependence of the matter on the Form is not a mere necessary condition, but is truly causal.

The Thesis is proved by the following arguments:

I. The first argument is an *argumentum ad hominem;*—of no little weight, be it observed, in the present controversy, which is a purely Scholastic one; though its issues are much more general and of the gravest importance. The purport is, to show that those Scholastic philosophers who maintain the opposite opinion are in contradiction with themselves; since they hold and teach the doctrine of formal causality, yet at the same time virtually deny its existence. The argument is as follows: If this natural dependence of matter on the substantial Form were a mere necessary condition and not causal, the Form must be expunged from the catalogue of causes. But this would practically amount to the subversion of the Peripatetic, or Scholastic, Philosophy. The *Major* is thus proved. The natural dependence of the matter on its Form for its existence is confessedly the dependence of matter as a passive potentiality on its act. Consequently, if this dependence is not causal, the actuation of matter by the Form (which is this same dependence in act) will not be causal. Therefore, the Form will not be formal cause of the matter. But neither of the composite; for the composite is really nothing more or less than the matter actuated by the Form. If this be true of the substantial Form; *à fortiori* must it be true of

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accidental Forms. Now, substance and accident are a real dichotomic division; within one or other of the members of which every entity is included. Therefore, in the hypothesis that this dependence of matter on Form is a mere necessary condition, there would be no such thing as a formal cause. Against the above argument it may be urged, that the dependence of matter *for its existence* on the Form and its dependence on the Form *for its completeness and substantial perfection* are not one and the same thing; and that consequently the latter may be causal, while the former is a mere necessary condition. The answer is plain. The dependence in both cases is really the same, though considered from two different points of view. The matter naturally depends upon the Form for its existence, because it depends upon the same for its actuation; and by its actuation it receives its completeness and substantial perfection. Wherefore, if the former is not causal; so neither can the latter be.

II. The substantial Form, as all are agreed, has a causal dependence on the matter. Therefore, *à fortiori* the matter causally depends on the Form; because the Form is out of all comparison the more noble. Consequently, it is only fitting that, of the two, its dependence should be the less stringent. Neither is it a valid objection against this second argument, that the Form depends upon the matter as upon its Subject; and that this can under no possible hypothesis be predicated of the Form: Therefore, it is necessary to admit that the dependence of the Form on matter is more stringent than that of matter on the Form. For there are more ways of dependence than one; and it cannot be admitted that the particular dependence on another as on a Subject is the most absolute. There is the dependence on another for entitative actuation, by which the existence and actual entity of the actuated depends on the actuating; and this is more absolute than the dependence of one entity on another as its Subject. For dependence is measured by indigence. Now, (as we have been already taught by the Angelic Doctor), if we consider the question metaphysically, the matter receives a notable perfection in its limitation by the Form; while the Form suffers loss in its limitation by matter, because the fecundity of its extension is diminished by its individuation.

III. The dependence of the matter for its existence upon the Form is shown to be causal from the essential nature of this dependence. For a pure passive potentiality essentially postulates its

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actuation and its existence as identified with its actuation. But matter is only actuated by its substantial Form.

DIFFICULTIES.

A. The first class of objections embraces those arguments which are adduced in proof that the said dependence is only a necessary condition.

I. This mode of dependence is possible; for it exists as a fact. The *Antecedent* is proved from the accidental dispositions of the matter in the process of generation. For the eduction of the substantial Form, the concomitant information of matter, and constitution of the composite, depend upon these conditions. But the dependence is not causal. Again: It is certain that the information of the matter and constitution of the composite depend upon the apportionment of matter by quantity. But here again the dependence is not causal. In both cases the dependence is but a necessary condition. Therefore, *à fortiori* matter can depend upon its substantial Form as a mere necessary condition.

ANSWER. So far is the above conclusion from being *à fortiori*, that it is not even *à pari*. There is no parity even between the instances adduced and the case of the substantial Form. In the first place, the said accidents are not the proper act of matter; whereas the latter is. Further: These accidents presuppose the existence and, therefore, the information of matter; and are accidental acts of the composite. Secondly, they are in a different Category from that of matter, the Form, and composite. Consequently, they cannot possibly exercise a causal influx into the existence of any one of the three. In their case, therefore, the dependence cannot be causal. But the substantial Form is the act of matter and, together with this latter, is by reduction under the same Category of substance. Lastly, considered as necessary conditions, they are included by St. Thomas under the material cause; while, considered as actually existing in the composite, they are concomitants of the Form.

II. The aforesaid mode of explaining the dependence of the matter on the Form is sufficient to account fully for all that has been predicated of this dependence; and the arguments hitherto offered in support of the contrary opinion go no further than

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to prove that matter depends on the Form as a necessary condition of its existence.

ANSWER. This assertion, unaccompanied by any proof, must be met with an unequivocal denial. The Angelic Doctor has predicated of matter that it is next to nothing,—that it cannot alone become the term of a Creative Act, and is consequently concreated with the Form,—that it cannot exist of itself, but receives existence from the Form,—that there is a mutual causality between matter and Form,—that 'It comes to pass in causes, that the same entity is cause and caused in a different order of causality. . . . It is the same with the relation existing between matter and Form. For, in the category of material cause, the matter is cause of the Form, in that it sustains the latter; while the Form is cause in the category of formal cause, because it causes matter to be in act[1].' Are these ample declarations, particularly in their collective strength, satisfied by the opinion, that the existence of the matter depends upon the Form only as a necessary condition? Again: Among the arguments adduced in support of the present Proposition, (let one example suffice), it has been urged that the Form exercises a real influx into the existence of the matter in consequence of the *essential* dependence of the latter, as a pure passive potentiality, on the former, as its substantive act. Can such an argument be satisfied by the dependence of the matter on the Form as on a mere condition?

III. The mode of explanation maintained by Suarez is easy and clear; for it enables us plainly to understand how the matter depends on the Form, the Form on the matter. The dependence of the Form on the matter is causal and *à priori*; while the dependence of matter on the Form is a mere concomitant condition and *à posteriori*.

ANSWER. Easy explanations of abstruse metaphysical problems have a name of evil omen. They are for the most part like the short cuts of inexperienced travellers, which end in leading those who venture them far away out of the right road. So is it in the present

[1] 'In causis autem contingit quod idem est causa et causatum, secundum diversum genus causae. . . . Et similiter de habitudine quae est inter materiam et formam: quia secundum genus causae materialis materia est causa formae quasi sustentans ipsam, et forma est causa materiae quasi faciens eam esse actu secundum genus causae formalis.' 4 *d.* xvii, *Q.* 1, *a.* 4, *q.* 1, *c.* *Videsis Verit. Q.* xxvii, *a.* 7, *c.*

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instance. We are in search of whatsoever causality interceding between two essentially imperfect entities that together make up an integral whole. They are so mutually dependent on the other, that neither can naturally exist in a state of separation; and it is rationally to be presumed that in this dependence may be discovered the causality for which we are in search. There are two elements in the case, which have to be taken into consideration. First, there is a great inequality of entity. The one is lowest in the scale of real things, with difficulty distinguishable from nothingness. The other is a likeness of the Divine Perfection, determining the nature of the integral composite of which it forms a part, and to which it gives its natural operation and beauty. Secondly, as these two entities cannot exist apart from each other; so neither can they be separately created or produced. Therefore, they are concreated, or conproduced in such sort at least that neither is, nor naturally can be, without the other. With these antecedents let us now look at the said clear and easy solution. There is a mutual dependence; therefore, as the dependence is causal in the one case, one would have imagined that it would be causal in the other. But no. Why not? Because matter is the Subject of the Form and, accordingly, postulates priority of nature. Therefore, the dependence of the Form on matter is causal; whereas the dependence of the matter on the Form—for its existence, be it understood, in both cases,—takes the shape of a mere natural condition. Such is the easy explanation. But then it creates fresh and graver difficulties. For, as has been already urged, it makes the Form more subject to the matter than the matter to the Form; yet the Form is incomparably the nobler entity. Moreover, in the instance of the human soul it is existentially independent of the matter, whereas matter cannot by any possibility in any way be naturally independent of the Form. Secondly, in the composition of the material substance it makes the matter the fundamental reality and the Form a mere condition; for it supposes the matter to be the cause of the existence of the Form, but the Form only a condition of the existence of matter. Thirdly, it virtually denies the real causality of the formal cause; for, if the Form is only a condition of the existence of matter, it is only a condition of its actuation. But how, it may be urged, can there be a mutual causality, for this would necessarily imply a mutual priority of nature? And why should there not be a mutual priority of nature according to different orders of causality, as the Angelic

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Doctor affirms that there is? But at least there can only be one invested with an absolute priority of nature in the act of creation or production. Granted; and that priority *in the order of genesis* is justly attributed to primordial matter as first Subject. Therefore,—say you,—the Form is only a condition of the existence of matter. This does not follow; for the Form has priority of nature in order of constituted being and complete existence. But how can these two as it were absolute priorities exist in the same production? Because the two constituents are essentially incomplete and, as a consequence, mutually dependent; and because neither of them is by itself created or produced, since both are concreated in the creation of the element, while in the order of natural generation the *new existence* of the matter is comproduced with the new Form. It may possibly be objected that the above explanation, however tenable in the instance of the creation of the elements, is not consonant with the patent facts of natural generation; since in natural generation the matter exists prior in order of time to the existence of the new Form. Therefore, the latter cannot be cause of the existence of the former. But this argument proves too much; for such premisses force us to the conclusion that neither can the Form be *a necessary condition* of the existence of the matter. To answer the objection, however, directly:—It must be borne in mind that, though the production of generated substances is effected by means of transformations which postulate a common Subject, there is, nevertheless, no temporal priority of matter over Form, but only over *this* new Form. It is never without *some* Form; and, if once denuded of all Form, would resolve into nothingness. Besides, here again it is a question of genesis (*in fieri*), not of constituted being (*in facto esse*). But to this answer there occurs a final objection. The existence of matter in the constituted substance must have a dependence on the Form of the same nature as it had in the genesis of the same substance. Yet, in the genesis of the new substance, its existence did not depend on the new Form; since it already existed under the old Form of the corrupted substance. Therefore, its existence cannot depend causally on the new Form. This objection is all but the same as that which has already occupied our attention. The retort, too, is the same. It tells equally against the Form being a necessary condition. Nevertheless, there is a grave difficulty included in the objection, which will be discussed under the second series.

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There remains yet another plea that may be made on behalf of the opinion of Suarez; and it is this. One principal argument brought against the said opinion is founded on a gratuitous assumption. It does not follow, because matter is not causally dependent on the Form for its existence, that all causality is denied to the Form. On the contrary, its true causality, as all admit, consists in the actuation of the matter. The plea would be a good one, if you could separate the actuation of the matter from its existence; which, however, is impossible. Act and existence are correlatives; and in order that a passive potentiality may be act, it must be in act or actuated. Passive potentiality and act are contraries. Accordingly, all Forms are acts. But material Forms are not acts in themselves; they are acts of the matter. Yet how could they be substantial acts of matter, if matter were already in itself an act?

B. THE SECOND SERIES OF OBJECTIONS INCLUDES ALL THE ARGUMENTS URGED AGAINST THE TRUTH OF THE PRESENT PROPOSITION. It is deserving of more attention than the former; since it introduces us to important and interesting metaphysical questions connected with the present dispute.

I. Matter is the Subject of Form, and is accordingly prior in order of nature to Form. Therefore, there can be no causal dependence of matter on the Form for its existence. The justice of the conclusion is based on the nature of the definition of *priority of nature*. For that entity is said to be prior in order of nature to another, which is independent of that other while the latter is dependent upon it. Therefore, etc.

ANSWER. This objection has already come under our notice. The reply, therefore, shall be summary. Priority of nature in entities that are integral in their own Category connotes that the entity which is prior has no causal dependence on the entity that is posterior in order of nature,—let it pass; priority of nature in entities that are essentially incomplete in the same Category,—there is need of a subdistinction: If there is no mutual priority of nature,—let it pass; if, as in the present instance, there is a mutual priority of nature under a diversity of respect,—denied. The substantial Form is dependent on the matter for eduction and inherence, the matter is dependent on the Form for actuation and existence.

II. Matter is produced and preserved by creation. Therefore, it can have no causal dependence on the Form for its existence.

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ANSWER. The *Antecedent* is denied. Matter is not produced or preserved by creation, but by concreation. Matter and Form are created together. Therefore, matter can have causal dependence on the Form.

i. THE OBJECTION IS URGED.

Concreation presupposes creation in order of nature. Wherefore, the production of matter may be considered under two aspects,—first, as created in its own entity, and then (so to say) concreated with the Form. But, as created in its own entity, it admits of no causal dependence on the Form. Yet this latter really represents the way in which matter was produced; while its so-called concreation only represents the creation of matter in such wise as to be naturally dependent on the Form for its substantial perfection and existence.

ANSWER. The *Antecedent* is denied. In the production of composite substance creation in a certain way presupposes concreation. Some explanation is requisite, in order rightly to understand this reply. It is supposed then, that the Divine Act of Creation is terminated to the production of the integral substance,—say, this element, or chemically simple body. It is supposed, further, for reasons already given and for others to be given presently, that the Act of Creation cannot be absolutely and adequately terminated to either matter or Form separately. Wherefore, the Divine Act of Creation looks to the element, or complete substance. As, however, this substance is essentially composite and constituted of matter and form; the Divine Act virtually contains two partial Acts, respectively terminated to the two substantial constituents which are in consequence said to be concreated. Wherefore, in the creation of an element concreation is after a manner presupposed; in as much as the virtual or partial Acts which are conceived as constituting the components are presupposed to the adequate Divine Act by which the element is created. The objection is based upon the hypothesis that primordial matter apart from Form can be the adequate term of a Creative Act. But this has been already rejected; and is untenable for the following additional reasons. First, it involves a contradiction in terms; for by virtue of its creation it would be an act, while in its own essential nature it is a pure passive potentiality. Again: Its creation, even if possible, would be unnatural, since, (as our opponents admit), the existence of

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matter naturally depends on the Form; whereas, if created, it would exist without the Form. Therefore, it would have been created miraculously. Therefore, it is preserved miraculously; since the Divine Act of Preservation is the Divine Act of Creation persevering. But miracles are not to be unnecessarily multiplied.

ii. THE OBJECTION IS URGED YET FURTHER.

Primordial matter is not concreated; because the production of the matter and the production of the Form are necessarily respective terms of two distinct Divine Acts. The *Antecedent* is thus proved. The eduction of the Form presupposes the matter in order of genesis. Therefore, one Divine Act is required for the production of the matter as Subject; and another Divine Act for the eduction of the Form. Moreover, these Acts are essentially different; for the production of matter is in the strictest sense out of nothing, whereas the Form is produced out of the matter.

ANSWER. The *Antecedent* is denied; and the prosyllogistic premiss which it contains is thus distinguished. *The production of the matter and the production of the Form are necessarily respective terms of two* adequate *distinct Divine Acts*,—denied; *of two Distinct Divine* partial *Acts*,—a Subdistinction is necessary: *The production of the matter and the production of the Form are necessarily respective terms of two distinct Divine partial* explicit *Acts*,—denied; *of two distinct Divine partial* virtual *Acts*,—there is need of a second Subdistinction, in order to render the reply complete: *The production, etc., are terms of two distinct Divine partial virtual Acts* with anything like an entitative distinction, (speaking after the manner of men),—denied; terminatively *distinct*—granted. To explain the above distinctions:—It has been already admitted that the Divine Act by which an element is created is equivalent to two partial Acts by which the matter and Form are concreated. But it is contended that these Acts are separately inadequate, i.e. that they cannot be, save in conjunction. Wherefore, they are not Acts explicitly distinct, but are virtually included in the one Act by which the element is created. Neither, again, as virtual and partial Acts is it necessary or consonant to suppose any entitative distinction, (to speak of things Divine after the manner of things human); but it is only required that the two Acts should be distinguished terminatively,—that is to say, that the matter should be

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concreated as dependent on the Form for its actuation and existence, and the Form, as springing from, and dependent on, the matter as Subject. For it is thus that they must subsist on the composite. The above explanation suffices to show why the proof of the *Antecedent* must be denied. Creation is of the composite; and the two constituents are concreated by and in that same Act, according to the indigency of their respective entities. Indeed, the fallacy of the argument may be clearly evinced by its legitimate extension. For, if it is proper to the Form that it should be educed out of the matter; so it is proper to the matter that it should be actuated by, and receive existence from, the Form. As, then, the Form prerequires and presupposes the matter; so in turn the matter prerequires and presupposes the Form, though according to a different order of causality. Consequently, there can be no creation. The concreation is denied. Therefore, no creation or production of the element.

iii. The Objection is urged yet further.

According to the explanation given, Creation would depend upon the eduction of the Form out of the matter. But this is a contradiction in terms. The *Antecedent* is thus proved. The existence of the components of a composite is prior in order of nature to that of the composite. Therefore, the creation of the composite would depend upon the eduction of the Form which is one of the two constituents.

Answer. The *Antecedent* is denied. On the contrary, the eduction of the Form out of the matter is included in the creation of the composite. As to the proof of the *Antecedent*, there is need of a distinction. *The existence of the components is prior in order of nature to that of the composites*, when the components are integral entities or, though incomplete, have a subsistence of their own,—granted; when the components are essentially incomplete entities and essentially dependent on each other for their existence,—denied.

III. If the dependence of matter on Form were causal, it would follow that natural agents conspire towards the Divine Act of the preservation of matter. Consequently, either the Divine Act of the Conservation of matter is distinct from that of its primordial creation, or natural agency conspired towards the Divine Act of

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Creation. The *Antecedent* is thus proved. Natural agents educe the substantial Form out of the potentiality of the matter in natural generation. If, therefore, matter depends causally on the Form for its existence, its preservation would depend on the Form and, therefore, on the natural agents that serve to educe the form. Consequently, these agents would conspire towards the Divine Act of the preservation of matter.

ANSWER. This is without doubt the gravest difficulty brought against the present Proposition and the declaration of it here given. Still, it seems to admit of a satisfactory solution. At the outset it is worthy of remark that the difficulty presses with almost equal force, if we adopt the opinion of our opponents that the Form is a *necessary condition* of the existence of matter. For natural agents, in supplying the necessary condition for the preservation of matter, would evidently conspire in their measure with the Divine Act of the preservation of matter. But to retort upon one's adversary with his own argument, is not to answer the objection. Wherefore, let us proceed to an examination of the difficulty. First of all observe, then, that an Act of Creation and an act of generation are two wholly distinct things. In an Act of Creation God alone produces the entity; in an act of generation the creature co-operates as a secondary cause with God. Both, however, agree in this,—that the adequate term of each act is the production of a new integral substance. Further: It is to be noted that, when God concreated the matter in the concreation of the elements, He concreated it in the essential nature of its own partial entity as a pure passive potentiality for the reception of whatsoever material Forms, and virtually containing them in itself; while by the same Act He concreated all the substantial Forms as *virtually*,—not actually,—existing in the matter, and one Form in particular as *hic et nunc* actuating each portion of matter in each element. Again: He concreated primordial matter as incorruptible, unchanging, naturally indestructible; while in the same elements He concreated the Form as capable of change, capable of receding from actual existence. Once more: He so created the elements that their corruption should be the generation of a new substance; and the same law was imposed upon all succeeding material substances. When, however, this system of mutations is called a law, it must not be imagined that it depends on the Free-Will of the Creator; for, always supposing the corruption of the antecedent substance

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and the action therein of an agent, it is an absolute necessity. Why? Because no action can be ultimately terminated to a mere privation.

Aided by these prolegomena, let us now look at the Act of Creation and the act of generation in their contrast with, and relation to, each other. (*a*) The two acts differ in their efficient cause. The Act of Creation is of God alone; the act of generation is of God and the creature together. (*b*) The respective terms of the two acts are different. The term of the Creative Act is the entire composite substance; while the term of the generative act is solely the eduction of the substantial Form; and it is called a new substance in this sense, that the matter is determined to a new specific nature. Hence, the matter remains in its essential entity as it was before,—a potentiality susceptive of all material Forms, though actually determined *hic et nunc* to such or such Form in particular. Therefore, the change is a transformation, not a transubstantiation. It follows from these premisses, that natural agency does not touch primordial matter, but operates only towards the eduction of the Form. But this exposition as well as the ultimate conclusion seem to favour the opposite opinion. For, if the Divine Act by Which matter was originally produced remains in all respects the same in the generation of the new substance, while the Divine Act Which co-operates towards the evolution of the new Form is not the same as the Acts which assisted in the production of all the preceding Forms in that portion of matter, (including the First Act creative of the elemental Form),—and if it is distinguished from the last mentioned in that it is conjoined with natural agency; it is evident that the two Acts must be explicitly distinct. Here is, in truth, the pith of the difficulty.

It is now time to return to the doctrine given at the commencement of this reply. The Act of Creation was terminated to the element; and the Divine Act of Conservation, consequently, (Which is the Act of Creation persevering), ceases, when and to such extent as the element ceases to be. The Divine Act of Production in natural generation is terminated to the new substance, and the Divine Act of Conservation, or of continued Production, ceases, when and to such extent as the new substance ceases to be. But this explanation seems to give birth to a yet more serious difficulty. For the Divine Act of Production is, we are told, terminated to the new substance which is composed of matter and Form. Conse-

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quently, either matter is created anew with the production of each new substance,—which is absurd,—or the primitive Act of Creation perseveres; and then it is impossible not to acknowledge that the two Acts, respectively terminated to the matter and the Form, are in every sense of the word distinct. The dilemma is denied. For the partial Act of Production, Which is terminated to the matter, is terminated to it as the Subject of the eduction of the Form according to its potentiality; while the partial Act of Production, Which is terminated to the Form, is terminated to the eduction of the Form. To this it may be objected, that the eduction of the Form presupposes the existence of the matter and, as a consequence, the continuance of the original Creative Act. We reply: There is no such thing as an original Creative Act, as terminated to matter alone. Such is the teaching of St. Thomas, as has been seen. It is a Concreative Act, and is really nothing more or less than the Divine Act Creative of the element, considered in its partial termination to the matter. Consequently, the partial Act of Conservation, Which is terminated to the matter, ceases, when the integral Act of Conservation, Which is terminated to the element, ceases. But this answer, it may be again urged, makes matters worse; for, in such a hypothesis, matter must cease to be with the corruption of every old, and begin afresh with the generation of each new, substance. For answer, it must be admitted that matter ceases its former existence, and begins a new existence with every new generation. This must be admitted as demonstrably true by all who admit that the existence of matter naturally depends upon the substantial Form, whether they hold such dependence to be causal or only a necessary condition. But matter continues all through *essentially* as a passive potentiality to all Forms. But if so, it may once more be urged, it exists (so to say) as a potentiality, and accordingly postulates the Divine Act of Conservation. We reply: The inference is illegitimate. Its entity perseveres under the two Forms; apart from both it would be nothing. But then, our opponent may finally object, if there should be corruption without generation, the matter would perish. We answer: The corruptive action is the generative action; the only difference is in the term of the two actions, if it is permitted to call them two. The same operation which disposes for, and educes, the new Form indisposes for, and expels, the old Form. Hence, if there were no generation, there could be no corruption. As a fact, the matter

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never ceases to be; for the end of one existence is the commencement of another.

IV. It would follow from the opinion defended in this Proposition, that, as often as the matter changed its Form, there would be a corresponding change in the Divine Act Conservative of matter.

THE ANSWER to this objection has been already given in the preceding solution.

V. That cannot be a cause of matter, which is necessarily posterior to matter in every kind of causality. But the Form is necessarily posterior to matter in every kind of causality. Therefore, etc. The *Major* is evident. The *Minor* is thus proved. The action by which the Form is educed out of the matter is evidently posterior to the matter in every kind of causality. But the Form must be posterior to that by which the Form is educed. Therefore, etc.

ANSWER. To begin with:—the argument may be retorted in this wise. That cannot be a cause of Form, which is necessarily posterior to Form in every kind of causality. But the matter is necessarily posterior to the Form in every kind of causality. Therefore, etc. The *Minor* is thus proved. That which naturally depends on the Form for its existence must be posterior to the Form in every kind of causality. But matter naturally depends on the Form for its existence. Therefore, etc. Nay, there is more show of reason in this conclusion than that of our opponent; since no one doubts that the Form is prior to matter according to final causality. This retort has been permitted to make its appearance for the sake of showing the inconsequences that must follow, if we regard Form and matter as two adequate terms of two explicitly distinct acts. To answer the difficulty ostensively: The *Major* of the principal syllogism is granted, and the *Minor* denied. As to the proof of the *Minor*:—the *Major* must be distinguished. *The action by which the Form is educed out of the potentiality of matter is evidently posterior to the matter in every kind of causality,* so far as the essential nature, or entity, of matter is concerned,—let it pass; is posterior to the new existence of matter in the new composite that is the term of the action,—denied. It is not the matter of itself that is the *term* of the causal action of the Form, but the existence of matter.

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PROPOSITION CCV.

The existence of matter is an effect of formal causality.

Declaration of the Proposition.

The truth enunciated in the present Thesis is a simple corollary from the preceding; for, if the dependence of matter for its existence on the substantial Form is causal, the existence of matter is an effect of the formal cause.

Difficulties.

I. That which has its own entity independently of another, (that is to say, not received from another), is not causally dependent on that other for its existence. But matter has its own partial entity, independently of the Form in the sense described. Therefore, etc. The *Minor* is certain. The *Major* is thus declared. Wherever there is real (actual, as is supposed) entity, there is real existence. If, therefore, a thing has its own partial entity independently of another, it must likewise have its own partial existence independently of that other.

Answer. For the sake of brevity the *Major* of the principal syllogism is denied, and the necessary distinctions will be made in the proof of the *Major*. *Wherever there is real entity*, naturally subsistent in itself, *there is real existence*,—granted; *wherever there is real entity* not naturally subsistent, *there is real existence*,—we have need of a subdistinction: *There is real existence* dependent upon the entity in conjunction with which it subsists,—granted; independently of the entity in conjunction with which it subsists,—there is need of a further subdistinction: *There is existence*, independently of the entity in conjunction with which it subsists, in the natural order,—denied; supernaturally,—a third subdistinction must be made: if there be no metaphysical repugnance,—granted; if there be a metaphysical repugnance, as in the present instance,—denied.

These distinctions need a little explanation. If a thing has an essential nature independent in its subsistence of any other, complete in itself, like an animal, plant, or any other integral substance; it is quite plain that it can naturally claim an existence of its own, independently of any other entity with which it may be accidentally connected. But, if an entity is not subsistent in its own

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nature apart from another, like accidents, the substantial Forms of bodies, etc.; then it behoves us to draw a line. For such entity may have a partial existence of its own in the composite, causally dependent on that in union with which it subsists; but it cannot, in the order of nature, have an existence independent of its partner component. Of course, the Divine Omnipotence may work a miracle in the case; unless the said independent existence should involve a contradiction in terms, such as occurs in the proposition that matter can have existence independently of its substantial Act. There is, in fact, an amphibology in the phrase, *possessing an entity, or essence, independently of another.* For, in a composite, the essence of one component is evidently not the essence of another; yet, forasmuch as both are partial essences together constituting one integral essence, not even their entities can be truly described as independent of each other. But we shall come across this objection again under another shape.

II. The causal dependence of matter for its existence on the substantial Form is disproved by the invariableness of its entity under all Forms whatsoever. For, if its entity and existence depended causally on the Form; with every change of Form there would be a change of entity and of existence. Wherefore, the existence of matter is not an effect of the Form.

ANSWER. Here again the same amphibology recurs, that has been noticed already. If the partial entity of the matter, *as entity*, depended causally on the Form; then it would be true that with every change of Form there would be a corresponding change in the entity of the matter. But if the partial entity of the matter, *as being partial*, causally depends on the Form; it is not necessary that a change of the latter should involve a change in the former. The *Conclusion* of the adversary's argument,—viz. that *with every change of the Form matter receives a new partial existence*,—is admitted; while it is denied that such a position is untenable, since it has been already shown that it must be admitted by our opponents equally with ourselves. Consequently, there will be no need of entering upon the proof of the *Conclusion*. This only it is necessary to observe; that a new existence by no means postulates newness of essence. Matter receives a new co-existence with each change of Form, because it necessarily owes its existence to the Form; it suffers no change of essence, because it is the common Subject of all

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Forms. In a similar way, congenial accidents in the corrupted, essentially remain but receive a new existence in the generated, substance; because their existence follows the existence of their Subject.

PROPOSITION CCVI.

The entity of primordial matter is such, that not even the Divine Omnipotence could preserve it in existence apart from some Form.

Prolegomenon.

Independently of the intrinsic interest attaching to the problem here proposed, the Thesis forms a necessary complement to the preceding ones; as it serves to determine more fully the causal dependence of matter for its existence on the Form. The question has always been a subject of debate in the Schools; but it will be seen that the opinion here maintained is supported unequivocally by the authority of the Angel of the Schools. It need hardly be said that Suarez consistently sustains the opposite opinion.

Declaration of the Proposition.

Let us commence with the teaching of St. Thomas; since we shall find in it the arguments demonstrative of the present contention. In the first passage to be cited the Angelic Doctor is engaged in discussing those words in the Mosaic account of the Creation,—*the earth was without form*,—(with an especial reference to the interpretation which St. Augustine had given them, viz. that they were intended to represent primordial matter), in order to determine the question that he has proposed to himself, viz. whether unformed matter was prior in order of time to its information; and he thus declares his mind. 'Augustine understands by the formlessness of matter the absence of all Form; and, thus understood, it is impossible to affirm that the formlessness of matter was prior in order of time either to its information or to its distinction. And as to the information, indeed, the thing is plain. For, if unformed matter had been created first, it would have been already in act; since *creation* conveys this. For the term of creation is Being in act; but that which is the act is the Form. To affirm, therefore, that matter had a previous existence without Form, is tantamount to

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affirming that Being in act is without act; and this involves a contradiction[1].' Similarly, in another place he observes, relatively to the same question: 'Some' expositors 'have considered that by these words,'—*the earth was without form*,—'is meant the unformedness of matter, such as belongs to matter when conceived without any Form, yet existing in potentiality to all Forms. But matter such as this cannot exist in the world of nature, unless informed by some Form or other. For everything whatsoever that is discoverable in the world of nature exists in act. But this matter does not receive save from the Form which is its act. Consequently, it cannot be discoverable in the world of nature without a Form. In the second place, since nothing can be contained under a genus, which is not determined to a species by some difference that divides the genus; matter cannot be Being without being determined to some special mode of Being. But this determination is effected only by the Form[2].' Finally: In another Work the Angelic Doctor directly discusses the point, '*Whether God could cause matter to exist without a Form.*' He preludes his solution by a statement of the evident truth, that God in His infinite Power can do anything that does not involve a metaphysical absurdity,—that is to say, a contradiction in terms. But, as he adds, the existence of matter without any Form is a contradiction in terms. This he proceeds to show in the following words: 'Everything that is in act, is either act itself or is a potentiality that partakes of an act. But to be in act' (an act[3]) 'is

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[1] 'Augustinus enim accipit informitatem materiae pro carentia omnis formae; et sic impossibile est dicere quod informitas materiae praecesserit vel formationem ipsius vel distinctionem. Et de formatione quidem manifestum est. Si enim materia informis praecessit duratione, haec erat jam in actu; hoc enim creatio importat. Creationis enim terminus est ens actu; ipsum autem quod est actus, est forma. Dicere igitur materiam praecedere sine forma, est dicere ens actu sine actu, quod implicat contradictionem.' 1ª⁰ lxvi, 1, *c.*

[2] 'Quidam namque intellexerunt, praedictis verbis talem informitatem materiae significari secundum quod materia intelligitur absque omni forma, in potentia tamen existens ad omnes formas. Talis autem materia non potest in rerum natura existere, quin aliqua forma formetur. Quidquid enim in rerum natura invenitur, actu existit; quod quidem non habet materia nisi per formam, quae est actus ejus. Unde non habet sine forma in rerum natura inveniri. Et iterum, cum nihil possit contineri in genere quod per aliquam generis differentiam ad speciem non determinetur, non potest materia esse ens, quin ad aliquem specialem modum essendi determinetur; quod quidem non fit nisi per formam.' *Pot.ª Q.* iv, *a.* 1, *c.*, *p. m.*

[3] One is inclined to believe that the reading is incorrect. *Actum*, not *actu*, seems to be required by the argument. The revision is supported by the fact that in the other clauses St. Thomas writes *in actu*.

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contrary to the nature of matter which, according to its proper nature, is being in potentiality. It remains, then, that it cannot be in act, save forasmuch as it partakes of an act. But the act of which matter partakes is no other than the Form. Hence, to affirm that matter is in act, is tantamount to affirming that matter possesses a Form. To affirm, therefore, that matter is in act without a Form, is to affirm that contradictories can exist together. Wherefore, it cannot be done by God[1].'

From these declarations of St. Thomas we gather two arguments in defence of the present Proposition, to which two others will be added.

I. Every Divine Act of Conservation is terminated to actual or existent entity. Consequently, if matter is the term of a Divine Act of Conservation, it must be in act. Now, every thing that is in act is either itself act, (as in the instance of purely spiritual Forms), or is a potentiality informed by some act. But matter is not itself an act, because it is a pure passive potentiality; therefore, it needs its substantial Form in order to be in act. Therefore, it must be actuated by some Form, if it is to become a term of a Divine Act of Conservation. To suppose, then, that matter apart from any Form could be a term of a Divine Act of Conservation, is the same as supposing that matter could be in act without its act, —or actual and not actual at the same time.

II. There is no entity that is capable of actuation, or existence, considered as exclusively a genus. No genus, as such, exists or can exist. It stands in need of specific differentiation. This is of all necessity, for universals cannot exist; and by how much the universal approaches nearer to the logical whole, by so much is the impediment to its actual existence more pronounced. In order, then, that a universal may be proximately determinable to individuation, it must be a metaphysical whole, or ultimate species. The reason is, that the ultimate species in any given line of abstraction represents an integral determinate essence, or a definite degree in the imitability of the Divine Perfection. But unformed matter

[1] 'Omne enim quod est actu, vel est ipse actus vel est potentia participans actum. Esse autem actu (?) repugnat rationi materiae, quae secundum propriam rationem est ens in potentia. Relinquitur ergo quod non possit esse in actu nisi inquantum participat actum. Actus autem participatus a materia nihil est aliud quam forma. Unde idem est dictu, materiam esse in actu et materiam habere formam. Dicere ergo quod materia sit in actu sine forma, est dicere contradictoria esse simul. Unde a Deo fieri non potest.' *Quol. L.* iii, *a.* 1, *c.*

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is the highest and most extensive generalization in its own line of abstraction and, consequently, is supremely indeterminate. It receives its specific determination from the Form. If, therefore, matter were preserved in existence without a Form, nature would exhibit as it were a Category, or highest generalization, in existence without any differentiation. This is metaphysically impossible.

III. No entity can exist without existence. But, if matter could be preserved in existence without any Form, it would exist without existence. Therefore, etc. The *Major* is axiomatic. The *Minor* is thus proved. The substantial Form intrinsically actuates matter,—that is to say, renders it actual, or existent; for there is no actuation without Form, since the Form, for all that it is, is simply and exclusively the act of matter. Consequently, if matter could exist wholly unformed; it would exist without actuation,—in other words, without existence.

IV. Substance cannot have an accidental existence *de potentia absoluta* without an accidental Form. Therefore, *à pari* matter cannot have a substantial existence without a substantial Form.

DIFFICULTIES.

These divide themselves into two classes; the first comprising arguments adducible in favour of the opposite opinion, the second including objections against the validity of the several proofs.

A. Arguments proposed in favour of the opposite opinion.

Suarez only offers one which is apparently his *magnus Achilles*. It is to this effect. Primordial matter has its own partial essence. Therefore, it can exist; since existence is the first act of essence. This argument is further confirmed by the fact that, even if we suppose the causal dependence of matter for its existence on the Form, this latter is not cause of the existence of matter in such sense as intrinsically to form a part of it; because matter and Form are simple substances. Therefore, the extrinsic causality of the Form may be supplied in some way or other by God Who can thus retain its partial essence in existence.

ANSWER. The *Antecedent* must be distinguished. *Primordial matter has its own partial essence* in the composite,—granted; apart

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from the composite,—denied. The *Consequent* must be contradistinguished. *Therefore, matter can exist* (that is, co-exist) in the composite,—granted; apart from the composite,—denied. The proposition subjoined to the *Consequent* must likewise be distinguished. *Existence is the first act of essence*, (or better, actual essence) corresponding with the nature of the essence, so that a complete essence has a complete existence, a partial essence a partial existence, a necessarily dependent essence a necessarily dependent existence,—granted; *existence is the first act of essence* irrespectively of such correspondence,—denied. An explanation shall now be given of these distinctions, which will contain the answer to the subsequent confirmatory argument of Suarez. It is true that primordial matter has an entity of its own, (such as it is); and it is likewise true that such entity is extrinsic to the entity of the Form. This second admission becomes apparent at once, if we look to the respective natures of each. Matter is a pure passive potentiality; Form is an act. But a potentiality cannot have the entity of an act, neither can an act have the entity of a potentiality. Nevertheless, there is an essential interdependence of entity in the case of each; for the potentiality of matter requires Form for its actuation; and the Form essentially postulates the matter as Subject on which it depends. Hence the impossibility of creating or producing them separately. They are essentially joint constitutives of one integral substance. Now, to apply these annotations to existence:—It is true that actual essence is existent essence. There is an amphibology in the phrase, *act of essence*; since it may convey the impression that existence is a distinct Form or mode supervening as a real complement of actual essence, which Suarez himself denies. Now, as the existence is objectively identified with actual essence, or essence in act; it is plain that the existence of an entity must correspond with the nature of its essence. This holds equally good, if we suppose that existence is something really distinct from actual essence. If, then, it is of the essence of an entity to be a pure passive potentiality; it cannot be actual of itself, and in consequence cannot be existent of itself. Its existence, therefore, must necessarily be a co-existence. If, then, God could preserve matter apart from all whatsoever Form, He must supply the actuation of a Form. But this He could only do by giving it somehow a Form; since Form and act are in the present instance equivalents. Hence, two inconveniences: The matter would be at once formless

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and informed; and the Divine Act would not be an Act of Conservation, but a new Act productive of a new substance. Accordingly, when Suarez puts to himself the important question, *how*, (in the hypothesis of the causal dependence of matter on the Form), God could supply the causality of the Form in the putative Act of Conservation, he ingenuously confesses, 'What that new action might be which God would employ for preserving matter without a Form, it is not easy to explain[1].' But, remark, it would require a *new action*. Suarez owns, therefore, that it would not be a mere Conservation of the existence of matter.

B. The second class of difficulties comprises the arguments impugning the validity of the proofs adduced in support of the Proposition.

I. It is urged as follows. The first argument, borrowed from St. Thomas, is based upon an equivocation. The terms, *potentiality* and *act* on the one hand, and *in potentiality* and *in act* on the other, are confounded. For, as Suarez reminds us, Scotus and others explain that 'matter is said to be a pure subjective potentiality which, as such, will be without an informing act; but when it is said that everything existing is in act; the term is understood of the entitative act which is opposed exclusively to objective, not to subjective potentiality.' Hence, an existing entity must be in act, because it cannot be merely possible; but it need not be act, because this is opposed only to a real subjective potentiality. Matter, therefore, may be in act, and consequently existent; though it is not an act either in itself or by information.

Answer. Equivocation is chargeable to the argument of our opponent rather than to the proof against which that argument is directed. It is quite true that an entity in act expresses a being in a state of existence, as contrasted with an entity in potentiality, (i. e. objective potentiality, as is plain), which expresses a being merely possible and not yet existent. But the question now before us is this: How is matter made actual, or in act? St. Thomas argues that everything is in act either forasmuch as it is an act itself or is informed by an act. Now, it is certain that matter is not itself an act. Therefore, to be an act, it must be informed by

[1] 'Quaenam vero esset illa nova actio, quam Deus adhiberet ad materiam conservandam sine forma, non est facile ad explicandum.' *Met. Disp.* xv, *sect.* 9, *n.* 8.

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an act. Hence it results that matter cannot by itself be actual or existent.

II. The second objection is directed against the second proof which has likewise been taken from the Angelic Doctor. It is as follows: The argument that any real entity under a given genus must be specifically determined, will equally apply to informed as to unformed matter. For the Form does not give a specific nature to the primordial matter, (which remains always the same), but to the composite. It is not necessary or possible that matter should be specifically determined by the nature of the composite, but by some species of its own if such there were.

ANSWER. It must be denied that the argument can be applied with equal force to informed matter. First of all, it is not altogether true that primordial matter remains precisely the same in the composite as it would have been, could it have existed alone. It remains—shall we say?—essentially the same under every composite; but it submits to a sort of modification in each. For, when it is actuated by the Form A, it is in potentiality to the Form B and to all other bodily Forms except A; and, when it is actuated by the Form B, it is in potentiality to the Form A and to all other Forms except B; and so on. But, secondly,—and this constitutes the direct answer to the objection,—it is precisely because matter in itself is, and must be, as it were generic or indeterminate, that it cannot become the sole or adequate object of an Act of Creation or of production. Herein lies the fundamental fallacy of our adversary's argument. For informed matter means the composite which, as we know, is nothing else but matter actuated by its Form. This is the only way in which matter can co-exist. It co-exists in the existence of the composite. Informed matter is capable, therefore, of being specifically distinguished; not, however, *qua* matter, but *qua* informed. Consequently, it is denied that matter, in order to exist, need not be in the specific nature of the composite. In fact, the objection is an instance of the fallacy of division; and the same argument would be effective to prove that no body inanimate or animate has a specific nature. For the matter, we are told, has no specific nature. The Form has no specific nature in itself; since it is that by which something else receives a specific nature. Further, the informed matter according to the same authority has no specific nature.

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III. The following objection is directed against the third proof. Although matter naturally receives its existence from the Form; God could, nevertheless, retain it in the existence which it had already received, as in the instance of accidents, while it would continue to retain its essential nature of aptitude for receiving Form.

ANSWER. 'Accident,' says the Angelic Doctor, 'depends for its being on the Subject as on the cause that sustains it. Because, then, God is able to produce all the acts of second causes without the intervention of the second causes themselves, He can preserve accident in being without a Subject. But matter depends for its own *actual* being on the Form; forasmuch as the Form is its very act. Hence, there is no similarity[1].' There is no need to add anything to this concise reply of St. Thomas; more particularly since the supposed analogy between the case of the accidents and that of the substantial Form has already been fully discussed elsewhere.

IV. The last objection is levelled against the fourth proof, and may be thus stated. The parity claimed between accidental and substantial entity does not exist. For the accidental entity in any substance is simply convertible with the accidental Form. Thus, *white in snow* is simply convertible with *the whiteness of snow*. The reason is, because, by virtue of its nature, every accident inheres in its Subject. Consequently, it is a contradiction in terms to suppose accidental existence without an accidental Form. But such is not the case with substantial entity. For material substance and the substantial Form are not simply convertible. The reason is, because in material substance there are, besides the Form, matter and the information of the latter by the former. Wherefore, it follows that the existence of material substance is not wholly absorbed by the Form, and that matter has a partial existence of its own.

ANSWER. As touching the particular point on which the argument turns, there is a perfect parity between the two. Suarez has forgotten to mention a most important element in the accidental composite; and it is this element precisely which makes the parallel complete. There is a real passive potentiality in the substantial Subject of a given accident, which gives to such Subject an aptitude

[1] 'Accidens secundum suum esse dependet a subjecto sicut a causa sustentante ipsum. Et quia Deus potest producere omnes actus secundarum causarum absque ipsis causis secundis, potest conservare in esse accidens sine subjecto. Sed materia secundum suum esse actuale dependet a forma, inquantum forma est ipse actus ejus. Unde non est simile.' *Quol. L.* iii, *a.* 1, 1^m.

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for being informed by its particular accidental Form. For instance, a diamond has a natural capacity for being hard, and no natural aptitude for being soft and sticky. By the eduction of the accidental Form such potentiality is reduced to act, and the diamond exists as hard. The embryo of a rabbit has an aptitude for locomotion, which the germ of a plant has not,—at least, as a general rule. After birth this aptitude of the rabbit is reduced to act, and the animal becomes locomotive. Nevertheless, till the accidental Form has actuated the said receptivity, neither would hardness exist in the diamond nor locomotion in the rabbit. Further: In answer to the argument of Suarez, it is granted that the accidental entity in the abstract,—that is to say, considered apart from its Subject,—is identified with the accidental Form; just as the specific entity of a material substance, considered apart from its Subject, is identified with the substantial Form. Man, for instance, is a rational animal because of his soul; and his rational animality, considered in the abstract, is simply convertible with his soul. But, if the accidental entity is considered in the concrete,—that is to say, in the accidental composite;—the accidental entity does not make an equation with the accidental Form, since it essentially includes a preceptivity, or passive potentiality, in the Subject.

ARTICLE VI.

The immediate information of matter by the substantial Form.

It is somewhat singular that Suarez has not *ex professo* treated the important question indicated in the above heading; which is the more to be regretted, not only because the point has a vital connection with the doctrine explained in the present and preceding Chapters, but because it gives rise to special difficulties, more particularly for those to whom the Peripatetic theory concerning the constitution of bodies is altogether new.

Since there is no controversy in the Schools about the fundamental truth that forms the subject of the next Thesis; for the sake of greater clearness and concision, the difficulties will be embodied in the declaration.

PROPOSITION CCVII.

In the composition of complete material substances, whether by Creation or by natural generation, it is of necessity that the

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substantial Form should immediately actuate the matter,—in other words, that there should be no medium, accidental or other, between the informing Form and the informed matter.

DECLARATION OF THE PROPOSITION.

In harmony with the professed object of this Work, it is proposed to commence the declaration of the Thesis by introducing the authority of the Angelic Doctor. Four quotations shall be given in order. 'As betwixt the matter and the Form,' he writes in a certain place, 'there occurs no medium in being, which is in the matter prior to the substantial Form, (for otherwise, accidental would be prior to substantial being, which is impossible); so, in like manner, between the nature and the supposit it is impossible that any medium should occur in the manner aforesaid, seeing that both these conjunctions are substantial[1].' Again: 'Form is united to matter independently of any whatsoever medium. For it belongs to the Form to be the act of the body in its own right, and not by the intervention of any other entity. Hence, there is nothing that causes unity out of matter and Form save the agent that reduces the potentiality to act, as Aristotle proves at the end of the eighth Book of his *Metaphysics*. For matter and Form are related to each other as potentiality to act[2]. Once more: 'The Form of itself causes a thing to be in act, since by virtue of its essence it is the act; and it does not give being through any medium. Hence, the unity of an entity composed of matter and Form is by means of the Form itself, which of its own nature is united to the matter as its act. Neither is there any other cause of union save the agent that causes the matter to be in act[3].' Finally: 'Each and every

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[1] 'Sicut enim inter materiam et formam nihil cadit medium in esse quod per prius sit in materia quam forma substantialis; alias esse accidentale esset prius substantiali, quod est impossibile; ita etiam inter naturam et suppositum non potest aliquid dicto modo medium cadere, cum utraque conjunctio sit ad esse substantiale.' 3 *d.* ii, *Q.* 2, *a.* 2, *q.* 1, *c.*

[2] 'Forma autem unitur materiae absque omni medio. Per se enim competit formae quod sit actus corporis, et non per aliquid aliud. Unde nec est aliquid unum faciens ex materia et forma, nisi agens quod potentiam reducit ad actum, ut probat Aristoteles . . .; nam materia et forma se habent ut potentia et actus.' *Cg. L. II, c°.* 71.

[3] 'Forma autem per seipsam facit rem esse in actu, cum per essentiam suam sit actus, nec dat esse per aliquod medium. Unde unitas rei compositae ex materia et forma est per ipsam formam, quae secundum se ipsam unitur materiae ut actus ejus. Nec est aliquid aliud uniens, nisi agens, quod facit materiam esse in actu, ut dicitur in 8 Metaph.' 1ª lxxvi, 7, *c.*

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entity is one after the same manner as it is Being. For each and every entity is in act by means of its Form, according either to substantial or to accidental Being. Hence, every Form is an act; and is consequently cause of the unity by which a thing is one. As, then, it cannot be said that there is any other medium by which matter receives being in virtue of its Form; so it cannot be said that there is any other medium uniting Form to matter'—if a substantial Form,—'or to the Subject[4]'—if an accidental Form.

The above statements of the Angelic Doctor are the source whence are drawn the proofs of the present Proposition.

I. The first argument is based on the essential nature of a Form; and may be thus put. Whenever any entity of its own essential nature is capable of immediately exercising its causality,—nay more, is essentially determined to such causality as the necessary condition of its existence;—there is no need of, or room for, any medium for the exercise of its causality. But the substantial Form of its own essential nature is capable of immediately exercising its causality, and is furthermore essentially determined to such causality as the necessary condition of its existence. Therefore, etc. The *Major* is evident. The *Minor* is thus declared. Every Form of whatsoever kind is in its own essential nature an act. A purely spiritual and subsistent Form is act to itself, and in itself complete; but material substantial Forms, (with the single exception of the human soul), are neither spiritual nor subsistent. Consequently, these latter are in their essential nature causal; for they are purely and simply acts of matter, causing matter to be *in act*. Neither does the human soul in this respect form any exception to the general rule of material Forms; for, though spiritual and subsistent in its nature, it eminently as well as functionally contains both vegetative and animal life within itself, and on this account is *formally* the act of the matter. Consequently, as being the substantial Form of the body, it is likewise in its own essential nature causal, and stands in no need of any medium by which to be united to the body.

II. The second argument is derived from the nature of primordial

[4] 'Unumquodque enim secundum hoc est unum, secundum quod est ens. Est autem unumquodque ens actu per formam, sive secundum esse substantiale sive secundum esse accidentale. Unde omnis forma est actus; et per consequens est ratio unitatis, qua aliquid est unum. Sicut igitur non est dicere quod sit aliquod aliud medium quo materia habeat esse per suam formam; ita non potest dici quod sit aliquod aliud medium uniens formam materiae vel subjecto.' *Spiritu. a.* 3, *c. init.*

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matter. Every passive potentiality essentially postulates actuation within the limits of the Category to which it belongs by reduction. Accordingly, a substantial potentiality requires actuation by a substantial Form, and an accidental potentiality requires actuation by an accidental Form. Now, primordial matter, as we have seen, is a substantial potentiality and, therefore, postulates a substantial Form for its actuation. But, if there were any medium between the matter and the causality of the substantial Form, that medium must be either a new substantial or an accidental Form. It could not be a substantial Form; for,—as will be shown in the next Article,—it is impossible that there should be two substantial Forms in one and the same substantial composite. Moreover, a similar medium would be required for this second substantial Form; and so on, for ever. The supposed medium, then, must be an accidental Form. But this, again, is impossible for two reasons. First of all, it would be contrary to the natural disposition of matter which postulates its primordial actuation by a Form of its own Category, and has no antecedent aptitude for any other. Secondly, it is absonous that matter, whose entire entity exclusively consists in the receptivity of a substantial Form, should require the intervention of an accidental Form in order to render that receptivity proximate. Finally, the receptivity of matter is not composite in its nature. It is not receptive in part of a substantial, in part of an accidental Form. It is wholly either in potentiality or in act. Consequently, if already informed by the accidental Form, it would thereby be rendered incapable of actuation by a substantial Form. Thus, its native inclination would be frustrate.

NOTE. The two concluding arguments take for granted that any such supposed medium could not possibly be a substantial Form.

III. The third argument is derived from the nature of the substantial composite. Material substance is the first of all created things in the order of nature. It is the Category on which all the other Categories depend, and to which they are all posterior. Hence the saying, that when Socrates was born, all the Categories were born with him. But, if some accidental Form were necessary as a medium by means of which the substantial Form might be united to matter and the composite substance constituted, an accidental Form would thus have precedence over all material substance. Hence, it is further plain that in such hypothesis an

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accidental composite would be first generated. For, since an accidental Form is an act and only requires a Subject of actuation, which in such case would be supplied to it by primordial matter, its conjunction with matter must constitute an accidental composite.

IV. The fourth argument is derived from the nature of accident. Accident in its essential nature has an aptitude for inhering in substance, and consequently postulates, as well as presupposes, a substance as Subject of inhesion. This essential disposition of accident cannot naturally be hindered from satisfaction; so that actual inhesion in a substantial Subject is the normal condition of all accidents, from which they can be restrained only by a miracle. But, if an accidental Form were a necessary medium for the actuation of matter by its substantial Form, accident would precede substance, and would find no Subject of information proportioned to its nature. Further: If the substantial Form required such a medium; *à fortiori* would the accidental Form require a like medium by reason of its more remote affinity with matter. But this involves an infinite process.

The question, then, is sufficiently plain, when considered in the abstract; but apparently insuperable difficulties await us, as soon as we proceed to consider it in the concrete. In the first place, sensile perception seems to give the lie to the solution of it here given. One might have less difficulty in conceiving that such was the arrangement in the creation of the elements, or simple bodies; but that the same law holds good in those natural generations which are constantly going on before our eyes, seems to contradict the evidence of our senses. When *iron* is converted into an *oxide*, the iron, its quantity, weight, etc., do not disappear; only a definite change comes over the metal. So, when a *seed* is sown in the ground, it does not vanish to make way for primordial matter and for the information of this latter by the definite vegetable-Form; but it remains side by side, so to speak, with the young embryo, feeding it, and finally disappears long after the young plant has entered upon life. This is the first difficulty. Then, again, it has been said in a previous Article that matter must be portioned by quantity, and must be endowed with various other accidental dispositions, in order that it may be proportioned to the particular Form that it is about to receive. But surely such a doctrine presupposes accidental Forms as necessary media for the actuation of

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the matter by the Form. This is the second difficulty. Lastly: It has been said that, in the generation of living material substances, there is a gradual evolution from lower to higher Forms of life; and one reason given was, that higher Forms of life require a higher and more developed organism. But organism is only an accidental disposition of the matter. Therefore, here once more we seem to have an acknowledgment that accidental Forms are necessary media by which certain Forms are enabled to actuate matter. This is the third and last difficulty. We will examine each in turn.

i. The first difficulty, arising out of the testimony of the senses, is comparatively easy of solution. Our senses are limited to the sphere of accidents. They cannot perceive material substance save by its operations; and of these, accidents are the immediate instrumental agents. Both matter and substantial Form are out of sight; because each is a simple, unextended, entity in itself. Even the congeries of accidents which, as it were, clothe and hide a substance, are often out of the reach of sense by reason of the narrow limits of the quantity. Hence, the microscope in recent times has revealed to us a vast new world of life, utterly unknown before. No wonder, then, if substantial changes and a substantial causality should be going on, pervious indeed to the intellect, but which our senses wholly fail to recognize. Nevertheless, it must be owned, (however the above observations may prepare the way), that the difficulty as yet is not satisfactorily resolved. For the objection is not so much that we cannot perceive with our senses primordial matter and the substantial Form, as that we positively see, or otherwise sensibly perceive, certain accidents remaining during the process of transformation and in the generation of the new substance. If the Form really informed matter without any medium, matter and its Form would be there alone; consequently, no accidents would be seen,—least of all, those of the corrupted substance. Yet, on the contrary, the same accidents are seen all the way through. The seed that we perceive by the senses may be a hierarchy of accidents inhering in the invisible substance; but so much the worse for the Proposition. However united, there they are; and there they remain to sense throughout the process of transformation, so that no one can tell the precise moment when the vegetable-Form is educed even when the seed is exposed to the view,—as happens with hyacinth-bulbs in their glasses.

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What is to be said in answer to this the most vital part of the difficulty? The solution is to be found in a doctrine already exposed touching the unbroken succession of corruptions and generations. Never for one single moment can matter be without a substantial Form. It is a metaphysical impossibility. That same instant which marks the recess of the old Form of the corrupted substance witnesses also the introduction of the new Form of the generated substance. Consequently, the accompanying accidents of the one or the other Form are continuously present. But why do the same accidents often appear to remain under both Forms? How is it that there is a progressive organism under successive provisional Forms, which connotes the perseverance of the more imperfect grades, so far as they are positive, through the process of evolution? In the first place, it is not universally true that the accidents remain under both terms of the transformation; as may be seen in the instance of the *pupa* and the *butterfly*. Still, it is undeniably true that accidents frequently appear to remain the same under both Forms. Thus, a man dies. The human soul no longer informs the body; and the corpse-Form supervenes. Here we have a retrogression from the highest grade of animal being to an inanimate body. Yet the external Form,—the organization,—the quantity,—sometimes, especially in cases of violent death, even the colour for a time,—remain the same. Now, it might be said,—in explanation of these facts,—that the substantial Form, regardless of the presence of these accidents, directly informs the matter, and continues in conjunction with the matter, (i. e. as constituting the new substantial composite), to sustain the accidents; in some such manner, (if the comparison may be allowed), as the magnet attracts a needle to itself, and draws the thread along with the needle by concomitance. There is a modicum of truth in this rough explanation; but of itself it obviously does not suffice. For differentiation in the accidents,—nay, their whole *raison d'être*,—fundamentally and all but entirely depends upon the Form. Hence, with a change of Form one would anticipate a change of accidents; more particularly as the accidents are instruments of the operation of the Form. The answer to this phase of the difficulty will find its appropriate place in the next paragraph.

ii. The second objection, which originates in the necessity for previous dispositions and the due proportionment of matter for the eduction of its Form, is one of a much more serious complexion.

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Since the said previous dispositions and proportionment are in their nature accidental; it does really seem as though the medium of an accidental Form were absolutely required, in order that the substantial Form might be proximately capable of eduction and, consequently, of actuating the matter. Further: It is undeniable that these dispositions, in each instance of natural generation, are prior even in order of time to the actuation of matter by the new substantial Form.

In order that the solution of this difficulty may be the more readily and clearly seized by the reader, it will be convenient to repeat an observation touching the nature of accidents. All natural accidents inhere in the integral composite; not in the matter or in the Form alone. When, then, we find it said that quantity follows the matter and quality the Form, this must be understood simply to mean that the former has a marked affinity of nature with the matter, the latter with the Form, (as has been already explained); not that either of them exclusively informs a part only of the composite. It follows from these premisses, that accidents of whatsoever kind never exist save in the substantial composite, and that their existence depends upon the existence of the composite,—that is to say, in other words, on the actuation of the matter by the Form. In the light of this doctrine let us now look at the dispositions of the matter in the course of natural generation. First of all, it is worthy of notice that these dispositions are introduced by the generating agent into the original substance, (the Subject of eventual corruption). Hence, for the whole time antecedent to the eduction of the new Form and the generation of the new substance, they are uncongenial accidents of the old substance. But their entity gradually grows; and they get to be more and more incompatible with their present Subject and more and more provocative of a substantial transformation. Consequently, the moment comes when the old Subject is corrupted by the expulsion of the old Form, and the new Subject, or substance, is generated by the introduction of the new Form. Then it is that the dispositive accidents, together with all others that are compatible with the new composite, exchange masters and become the possession of the latter. But now arises the main point of the difficulty. According to the explanation just given, two things would appear to follow. One is, that the accidents persevere in existence under the process of transformation. The other is, that the

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accidents owe their continued existence either to the matter that remains the same throughout or to the old corrupted substance. If the former, the accidents must be real media of formal causality; if the latter, they must be capable of existing in themselves, since they continue to exist after the corrupted substance has passed away. But this is impossible in the order of nature. The answer is as follows. Upon the information of matter by the new Form and the consequent constitution of the new substance, all the accidents that are congenial with the new substance and essentially persevere receive a new existence in the existence of their new Subject. Hence, they remain *essentially* the same but are made *existentially* new in the generated substance. This explanation is strikingly confirmed as well by those accidents which, existing under the old Form, are incompatible with the new, as by those accidents which, incompatible with the old Form, exist under the new. The former lose their existence, the latter commence their existence, with the introduction of the new Form. Hence, one can easily perceive a twofold relation of these persistent accidents to the new Form. As existing under the old Form and in the eventually corrupted substance, they are material dispositions; as existing anew in the generated substance, they are results or concomitants of the new Form. This distinction is repeatedly set before us by the Angelic Doctor. Thus, in one place he declares that 'Every disposition to a Form is attributed by reduction to the material cause[1]'; because such dispositions prepare the way for the eduction of the new Form. In other places, he refers them to the formal cause. But, again, elsewhere he reconciles the two statements. Thus, he tells us, that 'In natural entities the disposition which is a necessity to' the eduction of 'the Form, in a certain respect precedes the substantial Form,—that is to say, according to material causality. For a material disposition ranges itself on the side of matter; but in another respect,'—viz. considered 'on the side of formal causality, the substantial Form is prior, forasmuch as it completes both the matter and the material accidents[2]'

[1] 'Omnis enim dispositio ad formam reducitur ad causam materialem.' *Verit. Q.* xxviii, *a.* 7, *c.*

[2] 'Et est simile in rebus naturalibus de dispositione quae est necessitas ad formam, quae quodammodo praecedit formam substantialem, scilicet secundum rationem causae materialis. Dispositio enim materialis ex parte materiae se tenet; sed alio modo, scilicet ex parte causae formalis, forma substantialis est prior, inquantum perficit et materiam et accidentia materialia.' *Verit. Q.* xxviii, *a.* 8, *c.*

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by giving to both a new existence. Once more: He explains his mind more clearly in the following passage: 'As in the course of generation a disposition precedes the perfection towards which it disposes, in those entities which are subject to gradual perfectioning; so it naturally follows the perfection to which an entity has already attained. Thus, heat, which was a disposition towards the Form of fire, is an effect flowing from the Form of fire already pre-existing[1].'

The only part of the objection that remains unsolved, bears upon the special relation of quantity to the matter and to the informing Form. For this accident has a peculiar affinity with matter, not only because it is a sort of primordial matter to the qualitative accidents and has no activity of operation, but because of its indifference to the nature of the bodies that it informs and of the accidental qualitative Forms by which it may itself be actuated. Then, in the next place, it seems to be prerequired, in order that matter may be portioned. For these reasons it is undoubtedly the primal accident of material substance. This is confirmed by the Angelic Doctor, who teaches that matter 'Receives its division and indivision, its unity and multitude, which are the first consequents of being, from quantity. On this account they are dispositions of matter as a whole,'—that is to say, indivision, unity, etc., which are results of quantity,—'not of this or that only,'—that is, not of a particular portion of matter only. 'Hence, all the other accidents are founded in substance through the medium of quantity, and quantity is naturally prior to them. Consequently, it' (quantity) 'does not embrace sensile matter,'—that is to say, matter perceptible to the senses,—'in its definition; although it embraces intelligible matter,'—that is to say, matter perceptible to the intellect;—'as is declared in the seventh Book of the *Metaphysics*. Hence it has come to pass, that some have been deceived into supposing dimensions to be the substance of things subject to sensile perception; since, on the removal of the qualities, they perceived that nothing sensile remained save quantity. Nevertheless, quantity according to its being depends, just like the

[1] 'Sicut dispositio in via generationis praecedit perfectionem ad quam disponit, in his quae successive perficiuntur; ita naturaliter perfectionem sequitur, quam aliquis jam consecutus est; sicut calor, qui fuit dispositio ad formam ignis, est effectus profluens a forma ignis jam praeexistentis.' $3^{a\bullet}$ vii, 13, 2^{m}.

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other accidents, on substance[1].' Further: In answer to the first objection in the same Article, St. Thomas adds: 'The first accidents that follow upon substance are quantity and quality. And these two are proportioned to the two essential principiants of' material 'substance,—to wit, the Form and the matter. For this reason Plato laid it down that *great* and *small* are differences of matter; whereas quality is on the side of the Form. Again: Because matter is the first Subject which is in no other, while the Form is in something else, viz. matter; for this reason quantity approaches nearer to this characteristic of not being in another than quality, and consequently than the other accidents[2].'

In these two passages we have a summary, sufficient for our present purpose, of the teaching of the Angelic Doctor touching this question of quantity. He tells us, first of all, that there is no difference between quantity and the other accidents on the point of their one and all depending for their being on the composite substance. But, in the second place, quantity and quality,—the two primary accidents,—differ from one another, in that quantity approaches more nearly to the nature of matter, while quality approaches more nearly to that of the Form,—the two essential constitutives of bodies. The reason why quantity approaches more nearly to the nature of matter, is this, that it is receptive of qualities and has, moreover, a universality or indeterminateness of its own in such wise that it appertains to matter as a whole, not to this or that portion separately. Its very nature is, as it were, generic; so that, as the Angelic Doctor teaches elsewhere, it accompanies the body-Form, which is the first

[1] 'Prima autem dispositio materiae est quantitas; quia secundum ipsam attenditur divisio ejus et indivisio, et ita unitas et multitudo, quae sunt prima consequentia ens; et propter hoc sunt dispositiones totius materiae, non hujus aut illius tantum. Unde omnia alia accidentia mediante quantitate in substantia fundantur, et quantitas est prior eis naturaliter; et ideo non claudit materiam sensibilem in ratione sua, quamvis claudat materiam intelligibilem, ut dicitur in 7 Metaph. Unde ex hoc quidam decepti fuerunt, ut crederent dimensiones esse substantiam rerum sensibilium; quia remotis qualitatibus nihil sensibile remanere videbant nisi quantitatem, quae tamen secundum esse suum dependet a substantia, sicut et alia accidentia.' 4 *d.* xii, *Q.* 1, *a.* 1, *q.* 3, *c.*

[2] 'Prima accidentia consequentia substantiam sunt quantitas et qualitas; et haec duo proportionantur duobus principiis essentialibus substantiae, scilicet formae et materiae (unde magnum et parvum Plato posuit differentias materiae); sed qualitas ex parte formae. Et quia materia est subjectum primum quod non est in alio, forma autem est in alio, scilicet materia; ideo magis appropinquat ad hoc quod est non esse in alio quantitas quam qualitas, et per consequens quam alia accidentia.' *Ibidem*, 1[m].

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Form of matter and is virtually contained in every specific material substance. Lastly, it does not include in its definition, (for the Subject enters obliquely into the definition of an accident), sensile substance or matter; because material substance, denuded of quantity and its qualities, is not pervious to sense. But it includes intelligible matter and substance, which is the formal subject-matter of mathematics.

From the above doctrine of St. Thomas we are enabled to extract the solution of the difficulty proposed. It is impossible to admit, (looking at the whole question metaphysically), that quantity can precede the information of matter by the Form, and the consequent constitution of the composite, in order of nature; for quantity, just like any other accident, depends for its being on the integral substance. Looking, however, at the same question in the concrete, it divides itself off into two, corresponding with the twofold order in the constitution of material substances. In the creation of the primordial elements, the concreated substantial Form brought along with it, so to say, quantity together with the other accidents. Neither was the apportionment of matter a previous necessity; since the Form, by actuating, portioned the matter. In the natural generation of bodies the case is different. There can be no doubt that quantity, like many qualitative accidents afterwards to become accidents of the new substance, precedes even in order of time the eduction of the new Form as a material disposition; since it, together with the others, exists under the previous substance that is corrupted. But, as has been said already, it receives a new existence with the generation of the new substance.

iii. The third objection is derived from the evolution of higher Forms, as taught by St. Thomas. We have seen how in the human embryo, for instance, the matter progresses in organization till it evolves the vegetable-Form;—how the organization goes on, till the animal-Form supervenes;—how the organization proceeds yet further, until the human soul is breathed forth by creation into the fully organized body. This gradual development of organization is a necessary disposition by which the matter is prepared step by step for nobler Forms; and it continues through the whole process of transformations. But, after the explanations already given the answer is easy. Such organization is an accident,—or rather a congeries of accidents,—of material substance; and, in the generation of each new composite, receives a fresh existence.

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ARTICLE VII.

The unicity of the substantial Form.

The question proposed for consideration in the present Article should at the outset be clearly understood. It is this: Whether it is either naturally possible or at the least possible to the Divine Omnipotence, (Which is able to do any thing that does not involve a contradiction in terms), that more than one substantial Form should simultaneously inform the same portion of matter, or the same body. In the discussion of this question, (as, indeed, in that of others), the writer is bound to study the special requirements of the age in which he lives as well as the end which he has proposed to himself in the publication of the present Work. There are opinions, which of their nature would seem to claim a place in the proposed investigation, that will be entirely omitted, because they have become obsolete and have long since ceased to excite any interest. Such, for instance, is the opinion of the Manicheans, that man has two souls,—the one from the principle of good, the other from the principle of evil. Such, too, is the opinion of Occam, who would seem to have professed a somewhat similar theory, and has besides introduced a formal distinction between these two souls and the body-Form, with a similar distinction between this last and the sensitive Form in animals. Most of these forgotten, because erroneous, speculations will not be raised from their grave. One or two, which claim some amount of Scholastic authority, will be brought before the reader's notice but summarily dealt with. On the other hand, there are opinions, allied to the present question, which have an important bearing on subjects of modern interest and on recent discoveries in Physics. To these a marked prominence will be given.

As Suarez points out, there are three ways in which we may conceive a multiplication of substantial Forms to be possible in one and the same portion of matter. It may be maintained that there is one primary and dominant Form among the group, to which the remainder are essentially subordinate; or, secondly, that there is one essentially determinant Form which the remainder subserve as dispositions, so that the latter may be regarded as partial constituents of the material cause of the principal Form; or, lastly, that there is a congeries of Forms equal and independent of each other.

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Previously, however, to entering upon the consideration of these special hypotheses, the general question arises, whether under any conditions the existence of more than one Form in the same body is possible; if possible, to what extent possible. Consequently, the Article naturally divides itself into the four following sections:

1. The possibility in general of such a multiplication of substantial Forms in the same composite.

2. The possibility of multiplication with a subordination of the rest to one dominant Form.

3. The possibility of the co-existence with the determining Form of other dispositive Forms.

4. The possibility of the co-existence of Forms independent of each other in the same composite.

§ 1.

The possibility in general of a multiplication of substantial Forms in the same substance.

PROPOSITION CCVIII.

It is naturally impossible that more than one substantial Form should exist simultaneously in one and the same bodily substance.

THE PROPOSITION IS PROVED BY THE FOLLOWING ARGUMENTS:

I. Every entity owes its being and its entity to the same cause; because unity is a transcendental attribute of being. From the fact that a thing is Being, it is *ipso facto* one. But bodily substance owes its Being to the substantial Form. Therefore, to the substantial Form it likewise owes its unity. If, then, there were more than one substantial Form in one body, there would be more than one bodily substance. Even supposing, therefore, for the sake of argument, that the same portion of matter could admit of being actuated by more than one Form, the result would be the constitution of two or more integral substances. Let us, by way of illustration, imagine the same portion of matter to be informed at once by a rose-tree-Form and a dog-Form; plainly enough two distinct substances would be generated,—to wit, a rose-tree and a dog. This is the argument on which the Angelic Doctor seems principally to rely, when establishing the truth of the present Thesis. Thus; for

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instance, demonstrating that there is but one soul in man, he argues as follows: 'It is impossible that in one and the same entity there should be a plurality of substantial Forms, for the reason that a thing derives its Being and its unity from the same source. Now it is manifest that an entity receives its Being through the Form; wherefore, through the Form likewise it receives its unity. Consequently, wherever there is a multitude of Forms, the entity is not simply one; as, for instance, 'a white man is not simply one,'—because he is *accidentally* white and *substantially* man;—'and a two-footed animal would not be one simply, if he were animal from one cause and two-footed from another, as the Philosopher observes[1].' So, again, in another place where he is discussing the same subject, he repeats the same argument. 'An entity,' he writes, 'has its Being and its unity from the same source; for unity follows upon Being. Since, therefore, everything has Being from its Form; from its Form likewise will it have unity. On the hypothesis, then, that there are more souls than one in man after the manner of different Forms, man will not be one Being but many. Neither will an order in the Forms suffice for the unity of man; because unity of order is not simply order, since it is the least of unities[2].'

II. It is naturally impossible that more than one Form should simultaneously actuate the same portion of matter. The first reason is as follows: Matter, as we have seen, is a pure passive potentiality, and this connotes three things; first, a disposition for actuation as the essential complement of its perfection; secondly, an indifference as to the particular Form by which it is actuated; and lastly, an essential dependence on the Form for its existence. But its disposition, or tendency, towards actuation is satisfied by the information of one Form; its essential dependence receives adequate support from one Form; while it is indifferent to actuation by any other.

[1] 'Impossibile est in uno et eodem esse plures formas substantiales: et hoc ideo quia ab eodem habet res esse et unitatem. Manifestum est autem quod res habet esse per formam; unde et per formam res habet unitatem. Et propter hoc, ubicumque est multitudo formarum, non est unum simpliciter; sicut homo albus non est unum simpliciter, nec animal bipes esset unum simpliciter, si ab alio esset animal et ab alio bipes, ut Philosophus dicit.' *Quol. L.* I, *a.* 6, *c.*

[2] 'Ab eodem aliquid habet esse et unitatem; unum enim consequitur ad ens. Cum igitur a forma unaquaeque res habeat esse, a forma etiam habebit unitatem. Si igitur in homine ponantur plures animae sicut diversae formae, homo non erit unum ens, sed plura; nec ad unitatem hominis ordo formarum sufficiet, quia esse unum secundum ordinem non est esse unum simpliciter, cum unitas ordinis sit minima unitatum.' *Cg. L.* II, *c°* 58.

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Consequently, a multiplication of Forms would be wholly superfluous and beyond the tendency of matter.

III. Another argument, demonstrating the natural impossibility that one substantial Form should simultaneously actuate the same portion of matter, is derived from the natural operation of the Form. Each Form has its own natural operation; and matter subserves the Form in such operation which is, therefore, attributable to the integral composite. If, then, there were more substantial Forms than one in the same matter, the matter would have to accommodate itself to distinct and often conflicting operations which would postulate distinct and often opposed organization. For the sake of illustration we will suppose the same portion of matter to be informed at once by the Form of a *medicinal leech*, (or, to use the language of the craft, the *sanguisuga officinalis*), and by the Form of a *sparrow*. It is sufficiently plain that the difficulties in the way of a mutual accommodation would not be insignificant. The natural element of the leech is water; that of the sparrow, air. The leech has a taste for blood; the sparrow feeds on worms, insects, seeds. Hence, the necessity for a distinct organism. The leech is annulose,—has lips, mouth, triradiate jaws each with a semi-circular toothed margin, all adapted for its special kind of food,—and a comparatively simple arrangement of digestive, respiratory, and nervous systems. The sparrow is a vertebrate,—has a beak, wings, feathers all over its body,—a highly developed digestive, respiratory, and nervous system,—together with the full number of the organs of sense. It is impossible even to conceive how the same matter could serve for both. The impossibility is not so apparent, if we suppose two substantial Forms of the same species to inform the same portion of matter. Yet, even in this case, matter in course of nature would have to submit to an actuation in the composite substance by accidental Forms more or less opposed, in order that the two Forms might be individually differentiated. Imagine the same matter serving for a *bull-dog* and an *Italian greyhound*; or for a *tortoise-shell* cat and a *Manx*.

IV. A final argument, demonstrating the natural impossibility of more than one substantial Form simultaneously informing the same portion of matter, is deduced from the innate indefiniteness of such multiplication. If it should be once admitted that more than one Form could at the same time actuate the same portion of matter; where are we to draw the line? Matter of itself is

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indifferently receptive of all Forms. Therefore, there is as much reason why a given portion of matter should be informed by quintillions upon quintillions of Forms of every kind as for its information by two. Moreover, such a capacity would necessarily exclude the alternate processes of corruption and generation, as we see them in nature; since no supervening Form would exclude the continuance of any other. In fact, there is no assignable reason, on such a hypothesis, why one and the same portion of matter should not be simultaneously actuated by all the existing as well as possible bodily Forms in creation. But this is absurd in itself, and is contradicted by the unvarying testimony of physical facts [1].

NOTE.

Suarez has proposed the question, whether *de potentia absoluta* such a simultaneous concurrence of substantial Forms in the same portion of matter is possible; and he decides in the affirmative. It does not seem necessary to delay over the point; but thus much may be said. If this concurrence were metaphysically possible; at least it would not be metaphysically possible that it should result in the constitution of only one composite substance. The first argument, borrowed from St. Thomas, determines thus much.

§ 2.

The possibility of a multiplication of substantial Forms with a subordination of the rest to one dominant Form.

PROPOSITION CCIX.

It is neither necessary nor possible that the body-Form should co-exist actually with the specific substantial Form in the same composite.

DECLARATION OF THE PROPOSITION.

This Thesis is directed against the opinion of Scotus and others who, moved thereto by certain apparent reasons which will appear under the shape of objections, maintained that, in the instance of animate beings, the body-Form co-existed *actually*, not virtually only, with the specific Form in the same composite, though essentially subordinate to the latter.

[1] The XLII (otherwise XLV) *Opusculum* of St. Thomas may be read with profit, as it expressly treats of this question.

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I. THE FIRST MEMBER of the Thesis asserts that *it is not necessary for the body-Form to co-exist actually with the specific substantial Form in the same composite.* This assertion is commended to us by the teaching of the Angelic Doctor, from which the proof will be gathered. The body-Form, (*Corporeity*, as the Schoolmen term it), exists virtually in every material substantial Form; so that matter necessarily becomes body on its actuation by any whatsoever substantial Form. Hence, body is essentially co-extensive with informed matter in its entire extension; as the common language of mankind very plainly evinces. It is for this reason that the body-Form is truly conceived as the primary substantial Form; though never existing in itself, but always in some other specifically determinate Form as a virtual constitutive. For the same reason quantity is considered as its concomitant property; so that quantity and body-Form are co-extensive. Wherever there is body, there is naturally quantity; and wherever there is quantity, naturally there is body. Wherefore, every substantial material Form has in itself the virtue of making matter to be body, while at the same time constituting it a body specifically such or such. Consequently, there is no need in any single case of a body-Form actually existing and really distinct from the specific Form.

II. THE SECOND MEMBER, in which it is declared that this actual co-existence of the body-Form with the specific Form is impossible, admits of being proved as follows. It is impossible that a generic whole, as such, should actually exist in the world of nature; but it behoves that it should be determined to some definite species. The body-Form is a generic whole, as such. Therefore, it requires determination to some species in order to exist.

DIFFICULTIES.

I. Every soul, (including the vegetative and sensitive, as well as the soul of man), surpasses the ordinary grade of bodily substance; forasmuch as it presupposes organization, which inanimate Forms do not require. Further: The organization required becomes more complex and perfect in proportion to the nobility of the Form. Therefore, a soul presupposes another Form by which the matter may be proximately disposed for such organization.

ANSWER. No such presupposed Form is necessary; because the soul is sufficient to cause of itself the organism required, when it informs the matter. It is true that, according to the established

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order of natural generation, there are preparatory and dispository Forms, (which multiply in proportion to the higher grade of soul-Form, towards the evolution or introduction of which the generative process has been directed); but these severally retire,—the lower into the virtue of the higher,—in such sort that the highest and ultimate Form in the development virtually contains in itself all the preceding. In the established order of generation, therefore, transitory Forms are required in succession; but not the simultaneous co-existence of two substantial Forms in one and the same body, which is impossible. It should be added, that these transitory Forms are only conditionally necessary,—that is to say, by reason of the established law of evolution; for the Form *absolutely* has it in its own power to modify the matter according to its own behests by the informing act.

II. The above answer is at variance with the common sense of mankind as interpreted to us in the generally received way of speaking, which markedly points to the actual co-existence of a body-Form with the animating soul. Thus, it is said ordinarily that man is made up of soul and *body*, not of soul and *matter;* whereas, it would be said of oxygen, (for instance), that it is made up of matter and the oxygen-Form. So, again, it is the received definition of a soul, (with the authority of the Philosopher in its favour), that it is *the act of a physical organized body, having potentiality of life.* But such expressions and such definition evidently suppose, that the material cause in living substances is something more than matter; that it is matter so informed as to be a body, as it were, in its own right,—an organized body, proximately potential of life,—which it could not be, unless actually informed by the body-Form. For it must not be overlooked, that these expressions are used in contrast to the animating soul.

Answer. First of all, common modes of expression are not always philosophically precise; and it is stretching them beyond their legitimate claims, to make use of them as ultimate tests of scientific truth. They are doubtless always right; but they are right in their own way. Thus,—to take an instance,—people habitually every where speak of the sun rising and setting at such a time, and these terms are stereotyped in our almanacks; yet an astronomer would be loth to give up his Copernican theory on the

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strength of such phrases. So, again, from the historic time up to now everybody talks of the smell of a rose and of the flavour of a peach; while a psychologist knows full well that smell and flavour are not formally in the object, but in the senses of the soul. These remarks evidently cannot extend to a received *definition*. Wherefore,—to meet the present difficulty more nearly,—these expressions and the alleged definition can be fairly justified, without being driven to admit the actual co-existence of a body-Form with the animating soul. To begin with the well-known definition:—Physically considered, a plant or animal is substantially composed of soul and matter. But in a metaphysical definition the proximate genus is given (to speak logically) together with the specific Difference that contracts and determines it. Thus, man is defined to be a *rational animal;* although both reason and animality are included in the soul, while the *body* is only indirectly, and as a remote genus in a particular line of abstraction, included under *animal*. In like manner, plant may be generically defined to be an *animated body;* although physically it is the animating Form that makes the matter to be a body. The intimate reason of this is, that a metaphysical definition consists of the material and formal parts of an essence. Now, the metaphysical formal part of an essence is logically, as we have said, the specific Difference in a particular line of abstraction,—that is to say, considered in relation to this or that cognate chain of being; while the material part is that which is generic in the same line of abstraction. In this way, *body* as constituted in an animal is generic in the Porphyrian tree; while *animated by a sensitive soul* is specific and formal. Similarly, *animal* is the material part of man in the same line of abstraction; while *rational* is his formal part. Precisely in the same way, if we consider a *soul* (or animating Form) in the line of abstraction which starts from *Forms*, *act* will be the material part, since it is common to spiritual and material, to substantial and accidental, Forms; while *of a physical organized body, having potentiality of life*, represents the formal part, because these words constitute the specific Difference[1]. And thus the definition is verified, while the difficulty disappears. The popular expressions, referred to in the objection, must be otherwise

[1] See St. Thomas *in* 3 *d.* v, *Q.* 1, *a.* 2, 2^m^ *et* 3^m^, who gives precisely the same explanation.

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explained; though the solution of them will be simplified, for men who think, by that which has gone before. The common sort judge,—and, so far as their judgment is purely positive, judge rightly,—in accordance with the natural phenomena that meet the senses. They do not concern themselves with an occult antecedent process (*in fieri*); but with the constituted fact (*in facto esse*). By their common sense they recognize in the animate things of nature a body on the one hand, and a ruling, operating, life on the other. They separate the two; and phenomena justify the phenomenal distinction they make. But the essential link between the two, it is not theirs to see. It is object of science, not of common sense. The senses cannot near it; it reveals itself only to the practised understanding.

III. Lastly,—and this would seem to have been the principal argument that moved Scotus to adopt the opinion in question,—the co-existence of the body-Form with the soul of living bodies is deducible from the phenomena of death. When a thing dies, the animating Form leaves the body; and there is no other substantial Form that immediately takes its place. During this interregnum the matter cannot be existing without any Form at all. Therefore, the body-Form must have actually co-existed with the specific animating Form; and is seen to remain after the death of the once living entity. That no other new substantial Form then intervenes, is thus proved. If such intervention took place, the body would be specifically at once and individually different; whereas to all appearance it remains for some time specifically and individually the same.

Answer. It is undoubtedly true, that the matter which constitutes the body of a living creature cannot remain formless after death; but it is equally certain that the arrangement imagined by Scotus is naturally impossible. For, (not to repeat the arguments which go to prove that two substantial Forms cannot simultaneously inform the same portion of matter, as also the demonstration that the body-Form cannot exist unless specifically determined), according to the Scotist hypothesis there would be corruption without a corresponding generation. Neither does the reply avail, that generation is the necessary concomitant of a total corruption; whereas in the present instance it is only a partial corruption. For, in the first place, these partial substantial cor-

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ruptions are simply a new invention to meet the difficulty. They are not known in any other case; nor were they heard of before. Secondly, if we are to admit of partial corruptions, we must necessarily admit partial generations; which leaves the difficulty where it was. Lastly, the body would not remain the same, in the hypothesis of Scotus; because the informed matter would be generically *body*; whereas it was previously the specific body of a *geranium*,—say,—or of an *ox*. Yet the assumed identity of the body is the main stay of the theory. If it should be urged in reply, that the body remains generically the same; the answer is obvious. The bodies of a geranium and of an ox are generically the same; so that after death there is nothing to hinder the remains from becoming one body. There is another strong argument that tells against the theory of Scotus. On his hypothesis, there would be a partial substantial corruption; nevertheless, there would still remain a complete material substance composed of matter and a material Form.

Consequently, in unison with the common teaching of the School it must be said that, as soon as the living substance is corrupted and the soul recedes, the *corpse-Form* succeeds. Wherefore, it is no longer in reality either specifically or individually the same body; though it may analogically be considered as such by the title of former possession. As for the apparent identity between the two, the question has already been discussed; it may, however, be added, that there are commonly supposed to be specific and individual differences in corpses to correspond with those of living bodies. This would account for identity of structure, organism, individual marks, and the like.

It remains to show that the answer here given is in harmony with the teaching of the Angelic Doctor. In one place St. Thomas says, 'The dead body of a saint,' (the nature of the question discussed alone suggested the limitation, since the argument applies equally to all living things), 'is not numerically the same as it was at the first while living, on account of the diversity of the Form[1].' Again: 'The dead body of every other man,' except Christ, 'is not the same absolutely, but only to a certain extent; because it is the same as regards the matter, but not the same as

[1] 'Corpus mortuum alicujus sancti non est idem numero quod primo fuit, dum viveret, propter diversitatem formae.' 3ª° xxv, 6, 3ᵐ.

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regards the Form[1].' So, once more, while engaged in a discussion of the question, *Whether the Body of Christ on the Cross and in the Sepulchre was numerically One*, he objects to his own conclusion that it was One, as follows: 'All things whatsoever that differ in species, differ numerically. But the Body of Christ hanging on the Cross and' that Body 'lying in the Sepulchre differ specifically. Therefore, etc.[2]' The solution of St. Thomas will not be given, because it belongs to Supernatural Theology. It is enough to know that in his answer he clearly admits the existence of a specific difference in the mere order of nature, between a body dead and that same body alive. But, according to the hypothesis of Scotus, there could be no specific difference between a body alive and dead, but only a generic identity; since, in order to constitute a specific difference, the mutual opposition of two specific Forms is required. *Animal* and *horse* do not differ specifically. The Formula of St. Thomas would be, $M+F$ specifically differs from $M+F'$; the formula of Scotus, $M+C+F$ and $M+C-F=M+C$; (M representing the matter, C corporeity or the body-Form, F the specific Form of the living substance, F' the corpse-Form of the dead substance).

IV. An objection is urged against the above explanation, or answer. The introduction of a new Form postulates an efficient cause. But, in many instances of death, there is no agent to which the eduction of the corpse-Form can be attributed. Therefore, etc.

Answer. The same agencies which indispose the matter for retaining the vital Form concur towards the retrograde eduction of the corpse-Form.

PROPOSITION CCX.

It is neither necessary nor possible that lower Forms of life should actually co-exist with a higher Form of life in the same composite.

Declaration of the Proposition.

Certain Doctors of the School have maintained, that in man there are three souls really distinct,—a vegetative, animal, and

[1] 'Corpus mortuum cujuscumque alterius hominis non est idem simpliciter, sed secundum quid: quia est idem secundum materiam, non autem idem secundum formam.' 3^{ae} l, 1^{m}.

[2] 'Quaecumque differunt specie, differunt numero. Sed corpus Christi appensum in cruce et jacens in sepulchro, differt specie eo modo quo mortuum et vivum differunt specie. Ergo non est unum et idem numero.' *Quol. L.* IV, *a.* 8, 1^{m} *arg.*

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rational, soul. To be consequent, these authors would be compelled to admit, that similarly in irrational animals there are two actually distinct Forms,—the vegetative, and their own sensitive soul. The arguments already offered in previous Theses sufficiently establish the truth of the above enunciation, and afford a satisfactory answer to the reasons given for the contrary opinion. One more argument, however,—or rather a preceding argument under a new form,—may be added, in order to expose the absurdity of the theory in question. If, for instance, a vegetative soul and a sensitive soul could actually co-exist with the rational soul in a man, the two former must of necessity be determined to some definite species; for no genus, *as such*, can exist in the world of nature. Consequently,—to put it in the concrete,—*Charles* (we will say) has his own individual reasonable soul and, besides this, the vegetative Form of a *dandelion* as well as the soul of a *hippopotamus*. The practical incongruity of such a combination is sufficiently apparent; unless we suppose that these two latter Forms remain quiescent. But their remaining quiescent would suppose a Form deprived by nature of its natural operation; which is preposterous.

The constant teaching of the Angelic Doctor confirms, were confirmation needed, the truth of the present Proposition. Thus, in an *Opusculum* which is devoted exclusively to the discussion of this question, he expresses his judgment as follows: 'A Form that is virtually more perfect contains within it the less perfect Form. Therefore, the more perfect Form supposed, it is superfluous to suppose the less perfect. Since, then, there is nothing superfluous in nature; nature does not suffer that in the same composite there should be two Forms, one of which is more perfect than the other[1].' He then proceeds to heap up arguments in disproof of the theory that is here impugned; for which the reader is referred to the *Opusculum*. In the following passage, taken from another of his Works, the Angelic Doctor pursues the same idea. 'We must understand,' he writes, 'that substantial Forms have a similar relation, one with another, to that which subsists between numerals, as it is said in the eighth Book of the *Metaphysics*; or, again, like to that subsisting between geometrical figures, as the Philosopher

[1] 'Forma ergo perfectior virtute continet formam imperfectiorem. Posita ergo forma perfectiori, superfluit ponere imperfectiorem. Cum ergo in natura nihil sit superfluum, non permittit natura quod in eodem composito sint duae formae, quarum una sit perfectior alia.' *Opusc.* XLV (*aliter* XLII), *init.*

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remarks touching the parts of the soul in the second Book of his *De Anima*. For a greater number, or a more complex geometrical figure, always contains virtually within itself the less; just as *five* contains *four*, and a *pentagon* contains a *quadrilateral*. In like manner, a more perfect Form virtually contains within itself the less perfect; as is more particularly evident in animals. For the rational soul has the virtue of conferring on the human body all that the sensitive soul confers on brutes; and similarly the sensitive soul in animals causes all that the nutritive soul causes in plants, and more besides. Wherefore, in man a sensitive soul in addition to an intellectual soul would be useless; because the intellectual soul virtually contains the sensitive soul, and more besides; just as the 'enumeration of the' number *four* would be a useless addition, if we have arrived at the number *five*. The same holds good of all substantial Forms, till you arrive at primordial matter. . . . Accordingly, it is plain that, when the perfect Form comes, the imperfect Form is removed; just as the figure of a quadrilateral is removed, as soon as that of a pentagon supervenes[1].'

§ 3.

The possibility of a multiplication in the same body of substantial Forms, the rest of which are dispositions for the principal Form.

The discussions upon which we are now about to enter are of more than ordinary interest, if considered in the light of recent physical investigations. There is a relative importance, therefore, attaching to them, which it would ill become the author of this Work to ignore; seeing that one of his main objects, more particularly in the present Book, has been to show that the Scholastic Philosophy squares in a remarkable manner with the discoveries in

[1] 'Sciendum est quod formae substantiales se habent ad invicem sicut numeri, ut dicitur in 8 Metaph; vel etiam sicut figurae, ut de partibus animae dicit Philosophus in 2 de Anima. Semper enim major numerus vel figura virtute continet in se minorem, sicut quinarius quaternarium et pentagonus tetragonum; et similiter perfectior forma virtute continet in se imperfectiorem, ut maxime in animalibus patet. Anima enim intellectiva habet virtutem ut conferat corpori humano quidquid confert sensitiva in brutis; et similiter sensitiva facit in animalibus quidquid nutritiva in plantis, et adhuc amplius. Frustra ergo esset in homine alia anima sensitiva praeter intellectivam, ex quo anima intellectiva virtute continet sensitivam, et adhuc amplius; sicut frustra adderetur quaternarius, posito quinario. Et eadem ratio est de omnibus formis substantialibus usque ad materiam primam . . . Manifestum est autem quod semper, adveniente forma perfecta, tollitur forma imperfecta; sicut etiam, adveniente figura pentagoni, tollitur quadrati.' *Quol. L.* I, *a.* 6, *c.*

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modern physics. Possessed with this firm conviction himself and desirous that others, whom it more immediately concerns, should share in a like conviction, he has been induced to go somewhat out of his way, and perhaps to forestall certain subjects of subsequent investigation, in order that the doctrine of the School touching the constitution of bodies, and especially as to their substantial Forms, may be presented to the reader in its full integrity. To this intent the six following Theses have been introduced, in order to elucidate the solution of the problems that follow and are immediately connected with the subject of the present Section.

PROPOSITION CCXI.

All substantial bodily Forms in their own partial entity are simple and unextended.

PROLEGOMENON.

By the term *simple* is not to be understood such simplicity as is attributable to a mathematical point; but a simplicity by virtue of which the Form is entirely in the whole substantial composite and entirely in each and every actual or possible part. When it is said that *all* such Forms are in this sense simple, it is intended to include the Forms of inanimate, as well as animate, substances.

I. THE FIRST MEMBER of this Proposition, wherein it is asserted that *all substantial Forms in their own partial entity are simple*, is thus proved. The substantial act of a pure passive potentiality must be simple. But such is every substantial Form. Therefore, etc. The *Major* is thus declared. There cannot be more than one substantial act informing one and the same portion of matter; and that act specifically and individually determines the whole. Further: As Form of the matter it constitutes the parts, whatever these may be, and is prior to them in order of nature. Therefore, it is Form of the whole; and, as Form of a simple whole, is wholly its act. This no changes,—or rather, determinations,—can affect; for nothing can limit itself. When, then, parts or organs are constituted in the composite through the actuation of the Form; the Form is wholly in each, because it is wholly the act of the whole matter. Further: If we suppose it to exist only partially in the parts, though wholly in the whole; it must be composite in its own nature and, consequently, its components prior in order of nature to itself. Hence, it could not primarily be the act of matter, but of the parts constituted by itself; which is absurd. For, in such a hypothesis, the sum of its

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partial informations would constitute the integral information of the whole; not the integral information of the whole, the information of the parts. Once more: If the substantial Form partially informed the organs and parts of the composite; it would not be one act, but many,—each with its own distinct operation. Thus, for instance, the plant-Form would be no longer one; but there would be the root-Form, the leaf-Form, the tissue-Form, etc., collectively forming one nominal whole. These arguments are confirmed by the testimony of experience. Divide a diamond or a piece of sulphur, if this were possible, into atoms; each atom would be a diamond or sulphur, just as truly and completely as the original mass from which it had been taken.

II. The second Member, which declares that *all substantial bodily Forms in their own partial entity are unextended,* is evident; for extension is equivalent to quantity which is an accident of the composite. Hence, all bodily substances, previous to their information by quantity, would be unextended and naturally indivisible; *à fortiori* their essential constituents.

PROPOSITION CCXII.

All material composites, constituted by a living Form, have parts and organs proportioned to the natural operation and faculties of their respective Forms.

This Proposition virtually contains three Members. In the first it is maintained that, in strictness of speech, parts and organs are predicated of the integral composite, and not of either the matter or the Form separately. In the second it is asserted that all living bodies have parts and organs. In the third it is added that these parts and organs are proportioned to the natural operation and faculties of their respective Forms. Let us consider each by itself.

I. The first Member, which is to the effect that *parts and organs are, strictly speaking, attributable to the composite substance, not to either the matter or the Form separately,* is thus proved. Parts and organs connote physical composition. But both matter and the substantial Form are simple entities. Therefore, neither of them separately can have either parts or organs. Consequently, it remains that parts and organs are strictly attributable only to the integral composite, or material substance. Again: Parts and organs are properties of living bodies,—that is to say, accidents flowing from the essence of bodies. But accidents essentially presuppose

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the integral substance as their only adequate Subject of inhesion. Therefore, etc.

Nevertheless, parts and organs are attributed to the matter *in the composite* rather than to the Form; because in its partial entity matter, as a passive potentiality, is receptive of such dispositions, which a Form or act, exclusively as such, is not.

NOTE.

An inanimate substance may have *virtual* substantial parts, forasmuch as it is a compound. Thus, water is virtually made up of oxygen and hydrogen. Such partibility is plainly enough independent of that virtual divisibility into parts, common to all bodies, which is the result of quantity. The two can be easily distinguished; for the latter only multiplies the substance, while the former resolves it into its constituent elements.

II. THE SECOND MEMBER, in which it is affirmed that *all living bodies have parts and organs*, is thus proved. It has been already established that the matter *in the composite substance* must be proportioned to the Form. Consequently, the Form in its actuation of the matter introduces into this latter all those determinations which are necessary in order to establish such proportion. In plants, then, —to assume the lowest grade of life,—there are three faculties, viz. those of assimilation, growth, reproduction. In order, therefore, to enable the *typical* plant-Form, (for it is not necessary for our present purpose that the differentiations of vegetative life should be considered), to exercise the peculiar functions and operation which belong to its nature, it is necessary that the body should be fitted to both; since its functions and operation are purely material. Thus,—to keep to the original illustration,—for its functions of assimilation and growth the plant-Form needs organs; it finds them in its roots, leaves, veins, tissue. For its function of reproduction it needs organs; it finds them, in the sperm and germ-cells. So then, it must have parts in the composite of which it is the act, because separate organs connote diversity of parts. It must have organs; because organs, (as the Greek derivation sufficiently indicates), are the instruments of function, and through function the plant-Form evolves its natural operation. Without these it would be naturally impossible for the plant-Form to energize in accordance with its own nature; which means, in other words, that the matter would not be duly proportioned to its Form.

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III. The third Member asserts, that *these parts and organs are duly proportioned to the natural operation and special faculties of the respective Forms.* This proposition follows, as a corollary, from the preceding Member. For if it is necessary for the due apportionment of matter to its Form, that it should be organized in accordance with the natural functions of its Form; it follows that the number and nature of parts and organs must be proportioned to the number and nature of the functions of the Form. Thus it is,—for instance,—that an animal requires organs of sense; over and above the organs of assimilation, growth, and reproduction, that are required for the natural operation of the plant-Form; and a greater or less number of organs in proportion to the excellence of its Form.

Corollary I.

It follows that matter, as existing in the composite,—that is to say, under information of its Form,—is the proper seat of parts and organs, (as has been noticed in the declaration of the first Member); since these are instruments of the Form, by means of which it is enabled to energize. Of itself the Form is simple; and in the composite, *as substantial Act*, preserves its simplicity. Matter, on the contrary, is susceptive of differentiation. In other words, matter of itself is simple by reason of its entitative imperfection; the Form is simple by virtue of its entitative excellence.

Corollary II.

The Form causes distinction of parts and organs proportionably to the perfectness of its formal causality. Consequently, within the limits of the same species, these parts and organs are susceptible of appreciable modification according to the exigencies of the individual Form. Thus,—to take an illustration from botany,—the flowers of the snowdrops are, as we know, hermaphrodite. In the instance of *double snowdrops*, the stamina transform themselves into petals. When this occurs, the ovary pines away; because the function of fertility is arrested by the accidental transformation of the stamina. Similarly, the *mole* is born with the organ of sight, like other mammalia; but the organ does not grow with the growth of the animal and, in the adult, ceases to function. This latter is an instance of specific modification.

Corollary III.

All substantial bodily Forms have certain proper virtues or facul-

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ties proportioned to their grade. Those of inanimate bodies are comparatively few and simple; but they become more numerous and complex, as we mount higher in the scale of nature. Their correlation is due to the unity of their Form. They are limited in act,—such, at least, as do not transcend the sphere of matter,—to the part or organ through which they energize. Hence there arises a twofold way of regarding these Forms. We may either consider them as they are in their essential nature,—in their *first* act;—and, as such, they are simply and wholly in every part of the body. Or we may consider them functionally,—in their *second* act;—and, as such, they admit of physical distinction and partial localization. Thus, the function of sight is limited to the eye; and that of hearing normally in great measure to the ear.

NOTE.

Against the truth of the third Member of this Proposition it may possibly be objected, that modern observations in comparative anatomy have discovered certain rudimentary structures in higher orders of animals, more or less 'useless to' their 'organism, valueless for life-purposes, worthless for' their 'functions[1].' Thus; in man the *os coccygis* affords the rudimentary structure of a tail; and in the human *scapula*, or shoulder-blade, there is a process of the bone, called the *coracoid* process, (because of its resemblance to the beak of a crow), which in the bird is an independent bone, doing duty as a fulcrum for the downward sweep of the wing. But these physical facts offer no real difficulty, if we accept the teaching of Aristotle and of the Angelic Doctor. They are the result of the action on the matter of antecedent provisional Forms that have carried on the organization to its appointed term; and their arrest is due to the action of that higher Form which finally determines the specific nature.

PROPOSITION CCXIII.

No substantial bodily Form is absolutely capable of quantitative totality; although all such Forms are presentially and functionally determined by the quantity of the composite substance either wholly or in part, according to the specific nature of each.

PROLEGOMENON I.

By *quantitative totality* is to be understood that continuous unity,

[1] Ernst Haeckel's Evolution of Man, ch. 5 (vol. i. p. 109, Eng. Trans.). See the instances there given.

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or union of continuity, which is characteristic of extension, and causes that the quantified entity should be capable of division into parts, each one of which is entitatively less than the whole. An illustration will best serve to explain what is here meant. The *Naïdidae*, or water-worms, exhibit a singular process of reproduction. 'In this process,' says Dr. Nicholson, 'the *Naïs* throws out a bud between two rings, at a point generally near the middle of the body. Not only is this bud developed into a fresh individual, but the two portions of the parent marked out by the budding point likewise become developed into separate individuals. The portion of the parent in front of the bud develops a tail, whilst the portion behind the bud develops a head[1].' Here, then, we have at first one substantial Form and one body; afterwards, three substantial Forms and three bodies. In other words, that which was originally one living substance becomes three living substances. Now, each of these three newly generated animals has less matter, less quantity, than the original animal; taken together, they equal the latter in both. Informed matter, therefore, is capable of quantified totality. But what about the Forms? This is certain; that, whereas at the outset there was but one, by the separation of the matter there have arisen three. It is not necessary now to enter into the question touching the existence of these Forms; for thus much will not be denied, that the primitive worm had no more of act or Form than any one of the three into which it has developed. All in this respect are equal: They possess the substantial Form of the Naïs, which is capable of neither more nor less, but either is or is not. In like manner, if one flame is divided into two, there is as complete and adequate a Fire-Form in the parts as in the whole. These bodily Forms, therefore, do not exhibit a quantitative totality.

Prolegomenon II.

By *presential* determination is to be understood such determination to place as this, viz. that within the given limit the entity so determined exists and outside that limit exists not. *Functional* determination means the entire limitation of the faculty in its exercise to a particular part or organ. Thus, for instance, the human soul is presentially determined, like every other substantial act, by the limits of its body; and its vegetative and sensitive

[1] *Manual of Zoology*, part i, ch. xxix, p. 183.

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faculties are functionally determined to this or that organ; but in its faculties of intellect and will it is not functionally determined.

PROLEGOMENON III.

The word, *absolutely*, in the Enunciation needs to be explained. An entity, then, is said to be absolutely capable of quantitative totality, when it is of such a nature as to admit of union with quantity as Subject of quantity, just as—for instance—matter is. On the other hand, an entity is said to be capable *by accident* of quantitative totality, when, though in its own nature it may be incapable of information by quantity, it nevertheless becomes to a certain extent subject to quantity, on account of its natural connection with another entity that is quantitatively informed. Thus, a qualitative Form is essentially connected, immediately with quantity as being its immediate Subject, mediately with the integral substance as being its ultimate and adequate Subject. In itself, however, it is a pure Form and, consequently, simple. Since, then, it is quantitatively divisible, (for of this there can be no question), yet not in virtue of its own entity but by virtue of its inhesion in quantified matter, it is capable of quantitative totality only by accident. But remark, in order even to thus much it is necessary that a part should be entitatively less than the whole. Thus, for instance, the *sweetness* in one small lump of *sugar* is less than the sweetness in two lumps; as we know from the experience of the breakfast-table.

PROLEGOMENON IV.

It is obvious that the substantial bodily Form is here considered as actually informing the matter; for, apart from the matter it cannot exist and, therefore, is capable of nothing.

I. IN THE FIRST MEMBER of the Proposition it is maintained, that *the bodily substantial Form is* ABSOLUTELY *incapable of quantitative totality*. As we shall see presently, the intimate reason of this is explained by the Angelic Doctor. The proof is as follows. That Form which neither presupposes nor is founded in quantity, is not capable absolutely of quantitative totality. But a substantial Form neither presupposes nor is founded in quantity. Therefore, etc. The *Minor* is evident from all that has gone before touching the mutual relation between substance and accident. The *Major* is thus declared. Every Form is an act; and every material Form

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actuates its Subject according to the nature of that Subject. But the substantial Form actuates primordial matter antecedently (in order of nature) to the quantification of the composite, as is plain; since the actuation of the matter by the Form is the constitution of the composite. Therefore, it is simply the act of a passive potentiality and wholly actuates an indivisible whole. Hence likewise it follows, that the subsequent (in order of nature) information of the composite by quantity cannot *absolutely* quantify the Form, because it is a Form. For all that it is, is act; and, if it could be quantified, it would no longer be wholly in all but partly here and partly there. This, however, would suffice to change its essential nature.

II. In the second Member it is asserted, that *these bodily Forms are presentially determined by the quantity of the substantial composite;* which is thus declared. The substantial Form, because it is act of *this* definite portion of matter, is determined to it exclusively; and it is in this sense St. Thomas teaches that it is individualized by matter. An act cannot possibly be outside of the potentiality that it actuates. Consequently, when the composite is determined by quantity to a certain local extension, its Form is entitatively limited within the boundary of that extension; so that it is wholly *there* everywhere, but nowhere else.

III. In the third Member it is stated, that *the Form is functionally determined by the quantity of the composite substance;* which is thus declared. The purely material powers, or faculties, of all bodily Forms are determined in their exercise to certain particular organs. As soon, then, as these organs are locally extended by the supervening quantity, the faculties of the Form are determined in their exercise to a particular place in the body, occupied by its own organ. Therefore, the Form itself *functionally* is determined to such or such a particular place in the body by virtue of the quantity in the composite.

IV. The fourth Member declares, that *this functional determination of the Form is either entire or partial;* which is thus declared. Those material Forms, not all of whose functions are material, are not quantitatively determinable, so far as relates to those faculties which either are not material or in any way transcend material conditions. Hence, the human faculties of intellect and will *of themselves* are limited in their exercise to no bodily organ; though, for so long as the soul continues united to the body, they require

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the co-operation of other lower faculties that only energize in and by some bodily organ.

NOTE.

From the above declarations a truth is made clear, which will claim our special attention in another Book. There is a real, physical, distinction between difference of parts,—or what may be called *entitative* extension,—and *local* extension which is the result of quantity. A material entity may have a most complex arrangement of parts, and yet *de potentia absoluta* might exist as a mathematical point, so far as space is concerned. To put it yet more plainly:—Organism and an indefinite multiplicity of parts entitatively distinct from each other do not necessarily,—that is to say, independently of the constituted order of nature,—connote a correlative extension in space. Thus, *de potentia absoluta* the whole fabric of the visible universe, as it now is, might be so self-contained as to escape all actual or possible microscopic observation.

PROPOSITION CCXIV.

That retention of life after physical division of the organized body, which is observable in plants and in certain lower grades of animal life, is due, on the part of the Form, to the paucity of its faculties and, on the part of the body, to a corresponding paucity of its parts and organs.

PROLEGOMENON.

Suarez maintains the opinion, that the souls of all living bodies are subject to quantitative division, with the single exception of the human soul. Consistent with himself, he admits a specific diversity of parts in these Forms. Thus, speaking of plants, he observes: 'It may be easily granted that, in the different heterogeneous parts' of the plant, 'there are different heterogeneous parts of the Form. For, of a truth, in a tree that part of the Form which is in a leaf, is not of the same nature as the part that is in a fruit.' Further on, he adds: 'Though there is some controversy touching the souls of perfect animals, I nevertheless consider it more probable that no material Form is truly and properly indivisible.' Finally: A little further on, he thus sums up: 'I think it more probable, in the case of living entities which have extended souls,'—he assumes such to be the case with all plants

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and with all animals except man,—'that, between the parts of the soul which inform different organic parts, there is a greater diversity than there is between the parts of a homogeneous Form,'—such as is found in inanimate and inorganic substances;—'and that, therefore, there is in the substance itself a sort of diversity between these parts, which may rightly be called a specific partibility[1].' Here once more the author feels compelled to dissent from the opinion of this eminent philosopher. First of all, it is quite opposed to the teaching of the Angelic Doctor, as will be seen in a future Thesis. From a careful inspection of the doctrine of St. Thomas, indeed, it seems very doubtful whether in his opinion any material Forms,—even such as inform inanimate bodies,—are capable, strictly speaking, of quantitative division. Certain it is that he denies such capability, considered as *absolutely* belonging to them; and it may fairly be disputed whether he admits that it is theirs *by accident*. As to the souls of the more perfect animals, he categorically denies that they are capable of quantitative totality and, consequently, of quantitative division, either absolutely or by accident. Of the souls belonging to the inferior grades of animal life,—which in this respect may be considered as on a par with vegetative Forms,—he invariably speaks with hesitation. This latter point will be discussed, when his teaching on the question generally is brought before the notice of the reader. Other reasons for dissenting from the opinion of Suarez have been partly suggested in the preceding Theses, and will receive addition from those which have yet to follow. As touching plants in particular, which form part of the subject embraced in the present Proposition: Comparatively recent discoveries in botany, while tending to subvert the foundation on which Suarez professes to rest his opinion, have added proportional strength to the teaching of the Angelic Doctor. It is little more than a hundred years ago, that certain botanists,—principally Goethe,—came to find out that a whole flower is only a terminal stem, or branch, under another form; and that all its parts and organs are merely modifications of a leaf. The sepals of the calyx and the petals that form the corolla, spite of the often rich and varied colours of the latter, speak for themselves in the great majority of instances; but it is not so clear at first sight with regard to the special organs of

[1] *Metaph. Disp. XV, sect.* 10, *nn.* 30, 31.

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reproduction. Yet it is now generally acknowledged that the carpels of the fertilized pistil, the stamina, the anthers even of the stamina, are mere modified leaves. As to the two latter, any one can convince himself of the fact by examining a double flower, where he will often find stamina with their anthers in course of transformation into petals. To come to the fruit,—a term that is not a little indefinite, since (as in the instance of the strawberry, whose so-called fruit is the lengthened receptacle that envelopes the real fruits) it often embraces some other part of the flower that becomes incorporated with the ripened pistil:—let us take an apricot as an instance. Its outer skin is the exocarp; its pulpy part, the mesocarp; and its stone, the endocarp, of the carpel. Within the last lies the seed. Thus it becomes quite clear that this fruit is a carpel; and a carpel is only a folded leaf, as any one can see in a pea-pod with its mid-rib and the seam where the two edges of the leaf have joined. Thus, then, on the one hand, there is no such difference between the leaf and fruit of a plant as to require that distinction of function which Suarez supposes; on the other hand, the striking unity of organism tells strongly in favour of the indivisibility of the plant-Form.

Declaration of the Proposition.

There are certain facts connected with the reproduction of plants and of some inferior animals, which seem to militate against the doctrine touching bodily Forms that has been maintained in preceding Theses. The facts are these. Plants are propagated by slips;—that is to say, a certain part is cut off from the parent plant and fixed in the earth, where it gradually developes into an independent plant animated by its own individual Form. Again: Flowers plucked from the stem may live in water for days. Once more: In the lower grades of animal life, corals, for instance, are reproduced by gemmation or by fission,—in simpler phrase, by buds which under the form of embryos separate off from the parent animal, or by the severance of a completely organized offspring from its parent,—in both cases, independently of the ordinary immediate generative process. Reference has been already made in the first Prolegomenon of the preceding Thesis to the peculiar method of reproduction observable in a certain Order of Annelids, called Naïdidae. Professor Mivart mentions a further curious fact in the instance of the *Syllis*, another of the Annelids, 'where a

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new head is formed at intervals in certain segments of the body' without previous budding or spontaneous severance; evidently showing 'an innate tendency to the development at intervals of a complex whole.' He further tells us, that 'some other Annelids' exhibit the same tendency[1]. In another place he adds, that 'this remarkable phenomenon is repeated again and again, the body of the worm thus multiplying serially into new individuals which successively detach themselves from the older portion[2].' The facts connected with the class of *hydrozoa* are still more interesting. The hydra, we are told, is capable of indefinite multiplication by simply dividing it into pieces. 'Into however many pieces a *Hydra* may be divided, each and all of these will be developed gradually into a new and perfect polypite,'—that is to say, into a separate animal. But further: A great number of *hydrozoa* produce by budding or simple severance two distinct sets of their own species, —the one set destined only for the nutrition of the colony, the other exclusively for reproduction; though each individual of each set has its own powers of nutrition and locomotion, and is physically independent of his neighbour[3].

These physical facts give birth to two questions; one of which regards the parent substance that has been severed, and the other embraces the severed part or parts that acquire an independent existence. Wherefore,

i. It may be asked: How can it be explained on metaphysical principles, that a living substance can preserve its original integrity

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[1] *Genesis of Species*, ch. viii, p. 169. [2] *Ibid.* ch. x, p. 211.

[3] *Nicholson's Manual of Zoology*, part i, chapters vii, viii, pp. 80, 78. Dr. Nicholson denies that these animals are *individuals* in a zoological sense; because 'the term "individual" in its zoological sense must be restricted to "the entire result of the development of a single fertilized ovum,"'—that is, egg. (p. 77). This arbitrary definition is not a little perplexing to the metaphysician; since it denies individuality to living entities that possess all the characteristic notes of individuation. This author observes that 'neither the *trophosome* nor the *gonosome*' (the two classes referred to in the text), 'however apparently independent, and though endowed with intrinsic powers of nutrition and locomotion, can be looked upon as an "individual" in the scientific use of this term.' Why not? Because they are not derived from an egg. Then, if we assume the truth of the creation of Adam and Eve, neither Adam nor Eve was a zoological individual. On the like grounds the botanist must deny that any plants derived from slips are individuals; since they do not spring from seed. It is to be hoped, then, that Dr. Nicholson will excuse the following alteration in his last sentence: 'The entity in question cannot be looked upon as an individual according to the vocabulary of modern zoology; though *scientifically*, i.e. *metaphysically*, it must be so regarded.'

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after having endured a serious diminution of its original organized body; seeing that in the higher grades of life it would be impossible to incur a parallel loss without at least impairing the exercise of, and often without even destroying, its vital functions? The answer to this difficulty is as follows. It has, first of all, to be remarked that, looking at the Form exclusively as it is in its own partial entity, any diminution of the body which such Form actuates can make no difference, as may be seen in inanimate bodies. For, since the Form is in itself simple and unextended, quantitative division of the matter that it informs cannot touch it. It is, indeed, affected *presentially*. But how? The limits of its presence in space are contracted,—that is all; but its entire unpartitioned presence is not weakened by smallness or extent of quantity. The difficulty only begins, when we consider the Form *functionally;* since it postulates organs and parts proportionate to the nature and number of its faculties. If a purely material Form, it ceases to be, should it be absolutely deprived of its natural operations. Why? Because it ceases to be a proportionate act of matter; and in these circumstances a disruption, so to say, is inevitable. In other words, such Form no longer corresponds with the dispositions of the matter, and is compelled to make way for another more convenient Form. Hence it follows, as a sort of corollary, that by how much the faculties of the Form are more numerous and complex and, in consequence, the bodily organs are also more numerous and differentiated and locally distinguished; by so much will any severance in the body imperil the due functioning of the Form, and thus indispose the matter for its retention. But, in those instances of plants and of lower animals, wherein the faculties are few and simple with a corresponding organism; the living Form can fully energize with the portion of the body left to it. Thus, for instance, the structure of a worm is so simple and its organs so few and diffused over the body, that the animal's natural functions would hardly be disturbed by the loss of some of its rings.

ii. The second question is: How according to the philosophy of the School can it be explained, that the part severed from the parent-substance can acquire a new and independent life? While in union with the parent-substance, it was evidently informed by the substantial Form of the latter; subsequently to its separation it as evidently possesses a Form of its own. This seems at first sight

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to confirm the idea, that the Form after all is capable of division with the division of the quantified matter. St. Thomas, as we shall see, leaves the question more or less in doubt. Wherefore, the opinion may be safely expressed, that probably in most cases a new substantial Form is evolved out of the separated body; and that the parent-Form with its accompanying properties supplies the place of that active fertilization by which the matter is proximately disposed for its proportioned organism. But here arises a difficulty. For the above explanation seems to do away with the necessity of a generating agent in all cases of living bodies; since in the way mentioned each could propagate itself by parting with a portion of its body and proximately disposing the portion for the evolution of a cognate Form. The answer to the difficulty rests on the same foundation as the answer given to the former question, and is embodied in the Enunciation of the Thesis. The original generating agent in the production of the parent-substance can communicate such virtue to the Form of the generated substance, that this latter can generate without normal generation, when the specific functions are few, the organism simple and distributed, —or better, *diffused*. The reason is plain. The separated portion of matter shares in the diffused organism, and is thus in proximate preparation for the eduction of its Form. The Form will supply the little that is wanting simultaneously with its eduction. But with a complex and multifarious organism the case is very different. It takes but little to supply the acranial head and the tail of a worm; but it would require a far more elaborate process to develope eyes, ears, nose, a vertebrate structure, heart, lungs, etc., out of the hoof of an ox.

In the instance of plant-slips the case seems plain; for corruption takes place prior to the eduction of the Form and the concomitant evolution of the root. The same may be said of animal reproduction by budding. Nor is there anything in the facts connected with the multiplication of the Hydra, which stands in the way of such an explanation; though these facts, on the other hand, of themselves, tell nothing in its favour. But that which is wanting to them is supplied by the homologous phenomena presented by the *naïs* and *syllis*; for in their case new heads and new tails are developed either immediately before or after complete separation. The case of the plucked flowers presents the only real difficulty. But here, however the phenomena of apparent life are to be

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explained, it would seem certain that there is no real plant-Form in them, for they exhibit neither of the characteristic, or essential, functions of a plant,—to wit, growth and capability of reproduction. Even, however, if it should be necessary to admit that in one or other of these instances the Form is multiplied by the division of the body, (which is by no means granted); such an opinion would not seem to postulate that the Form should be capable of quantitative totality. On the contrary, the new Form, though coming from the old, would not be a quantitative part of it; since its nature or entity is in no respect less than that of the old Form previous to the separation, and a quantitative part could never be equal to the whole. How, then, is the multiplication to be explained? Perhaps in this wise. The original Form was wholly in the body that it informed and in every part of that body; but presentially limited by the one continuous periphery of the body. When the body is divided, there are two peripheries instead of one; and the Form is multiplied simply by virtue of the perseverance of its presence in the two. The body was one, the act was one; the body becomes two, the act becomes two.

NOTE.

The budding and grafting, so well known to gardeners, present no real difficulty; for there is no substantial plant-Form in the bud or scion after separation from the parent-stock, but only those natural dispositions of the matter under the provisional Form, which, after the union of the bud or scion with the substantial Form of the new stock, cause those modifications in the natural operation of the latter, that produce the varieties required. A sign of this is, that beneath the inserted scion or bud the primitive action of the Form is undisturbed.

PROPOSITION CCXV.

The teaching of St. Thomas confirms the truth of the preceding Theses.

DECLARATION OF THE PROPOSITION.

St. Thomas declares that 'It is the composite' in material substance 'which has diverse parts. Hence, diversity of parts does not belong to the matter or to the Form, but to the composite[1].'

[1] 'Compositum autem dicitur quod habet diversas partes. Unde diversitas partium non est materiae, nec formae, sed compositi.' *Opusc.* XXII (*aliter* XXVIII), c° 5, *init.*

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Therefore, every substantial Form is simple, at all events in such sense that it has no parts. Elsewhere he explicitly states the nature of this simplicity. 'The simplicity of a soul and of an Angel,' he writes,—and the whole Article plainly shows that he is not limiting the term to the human soul alone,—'is not to be estimated after the fashion of the simplicity of a point which has a determined position in the continuous and, because it is simple, cannot be in different parts of the continuous. But an Angel and a soul are said to be simple, because they are wholly destitute of quantity. . . . And as an Angel is wholly in every part of his place; so a soul likewise is in every part of its perfectible[1]' body. But this simplicity, which in the above passage he attributes to a soul, is likewise attributed by him elsewhere to an inanimate Form. 'The whole substantial Form of wood,'—such are his words,—'is in every part of it; because the totality of a substantial Form does not admit of quantitative totality, as is the case with the totality of accidental Forms which are founded in quantity and presuppose it[2].' Wherefore, according to the Angelic Doctor, all substantial bodily Forms, no less than those which are purely spiritual, are simple in this sense, that they are wholly in the body they inform and wholly in each part of it. Furthermore: they are not extended, *because they are wholly destitute of quantity*. So much for the *two hundred and eleventh* Proposition.

ii. Again: St. Thomas writes as follows; 'When, then, any substantial Form perfects matter; as the potentiality of matter is reduced to act by the Form, so by that same being it is changed into a distinction and termination of the parts of the integral composite. For in the substantial Form there is a force not only perfective of the matter, but likewise capable of distinguishing the whole by means of parts[3].' In another place he adds: 'Every

[1] 'Simplicitas animae et Angeli non est existimanda ad modum simplicitatis puncti, quod habet determinatum situm in continuo; et ideo quod simplex est, non potest esse simul in diversis partibus continui. Sed Angelus et anima dicuntur simplicia per hoc quod omnino carent quantitate. . . . Et sicut Angelus est in qualibet parte sui loci totus, ita et anima in qualibet parte sui perfectibilis, tota.' *Anima*, *a.* 10, 18[m].

[2] 'Sicut tota forma substantialis ligni est in qualibet parte ejus, quia totalitas formae substantialis non recipit quantitatis totalitatem, sicut est de totalitate formarum accidentalium, quae fundantur in quantitate, et praesupponunt ipsam.' 4 *d.* x, *a.* 3, *q.* 3, *c.*

[3] 'Quando ergo aliqua forma substantialis perficit materiam; sicut potentia

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soul requires a diversity of organs in the parts of that body of which it is the act; and so much the greater diversity, in proportion to the greater perfection of the soul[1].' Thus much will suffice for the *two hundred and twelfth* Proposition; though other passages about to follow will confirm the same teaching.

iii. In the first of the quotations under the first heading, St. Thomas has told us that a soul,—a living Form,—is wholly destitute of quantity; and, in the second under the same heading, he has declared in general that no substantial Form admits of quantitative totality. To these will be added certain pregnant passages which give evidence in favour of other Propositions as well as of the *two hundred and thirteenth*. Speaking of our immediate subject generally, the Angelic Doctor remarks as follows: 'This totality,' (that is to say 'such as can be naturally divided into quantitative parts'), 'can be attributed to Forms'—accidental as well as substantial,—'only by accident, inasmuch as they are accidentally divided by a division of the quantity; as, for instance, whiteness by division of the superficies. But this' accidental division and accidental subjection to quantitative totality 'belongs to such Forms only as are co-extended with quantity, which comports with certain Forms for the reason that they have similar matter in the whole as in the parts. Wherefore, Forms that require a great dissimilarity in the parts have not such extension and totality; as souls, especially those of perfect animals. . . . A soul, therefore, and especially the human soul, has no extension in matter. Hence, in its case the first totality,'—viz. that of quantity,—'has no place[2].' In this passage certain points are propounded as certain. (*a*) No Form, whether it be substantial or accidental, is *absolutely*

materiae est reducta per formam ad actum, ita per illud idem esse permutatur ad distinctionem et terminationem partium totius compositi; in forma enim substantiali non solum est vis perfectiva materiae, sed etiam distinctiva totius per partes.' *Opusc.* XXXII (*aliter* XXVIII), *c.* 5, *v. m.*

[1] 'Et ideo omnis anima requirit diversitatem organorum in partibus corporis cujus est actus; et tanto majorem diversitatem, quanto anima fuerit perfectior.' *Spiritu, a.* 4, *c., v. m.*

[2] 'Haec totalitas non potest attribui formis nisi per accidens, inquantum scilicet per accidens dividuntur divisione quantitatis, sicut albedo divisione superficiei.' Sed hoc est illarum tantum formarum quae coextenduntur quantitati; quod ex hoc competit aliquibus formis, quia habent materiam similem et in toto et in parte. Unde formae quae requirunt magnam dissimilitudinem in partibus, non habent hujusmodi extensionem et totalitatem, sicut animae, praecipue animalium perfectorum. . . . Anima autem, et praecipue humana, non habet extensionem in materia; unde in ea prima totalitas locum non habet.' *Spiritu, a.* 4, *c., p. m.*

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capable of quantitative totality, but only *by accident*. (*b*) No Forms are capable of quantitative totality even by accident and, consequently, of division, that are not extended together with quantity. With these we arrive at a point where a doubt arises touching the mind of the Angelic Doctor. His words generally would lead us to conclude that only accidental Forms are extended with quantity; and the example repeatedly given, as in the last quotation, of *whiteness* in a superficies confirms the supposition. But the subsequent sentence, *which comports with certain Forms, for the reason that they have similar matter in the whole and in the parts*, evidently refers to substantial Forms. These words may refer,—indeed, it is evident they do refer,—to the substantial Forms of inanimate substances. But do they refer to such bodies exclusively? The subsequent context would lead one to infer as much; but then, in his answer to an objection, which appears in the same Article, he expressly includes certain lower grades of animals. He says: 'In those animals that live after severance, there is one soul in act and many in potentiality; and by the severance they are reduced to a multitude in act, as happens to all Forms that have extension in matter[1].' These words seem to denote that the souls of these inferior animals are extended and, consequently, are capable *absolutely* of quantitative totality. Hence, two questions present themselves touching the teaching of the Angelic Doctor on this subject. In the opinion of St. Thomas are the Forms of *inanimate* bodies capable of quantitative totality by accident? Are the Forms of some lower kinds of animals also capable of quantitative totality by accident? Let us briefly examine each of these points.

1°. It cannot be doubted that, in the judgment of St. Thomas, the substantial Forms of inanimate, or inorganic, bodies are capable of quantitative totality and consequent division *by accident*. So far, by reason of their total immersion in matter, they bear a resemblance to accidental Forms, but with this difference;—viz. that as acts of primordial matter they do not presuppose quantity, while qualitative Forms are immediately acts of quantity. This causes an essential distinction in the divided parts of the body with relation to the two kinds of Forms; because the substantial

[1] 'In illis animalibus quae decisa vivunt, est una anima in actu, et multae in potentia; per decisionem autem reducuntur in actum multitudinis, sicut contingit in omnibus formis quae habent extensionem in materia.' *Ibidem*, 19^m.

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Form is equally in the part as in the original whole not only in regard of its specific nature,—for this is verified likewise in the instance of accidental Forms,—but it is *intensively* equal in both, —which cannot be said of qualitative Forms, since they are *more* or *less* with the quantity. Such multiplication of these substantial Forms is not dissimilar to *presential* multiplication. The Form is multiplied by virtue of a multiplication of peripheries, or of the continuous.

2°. There is much greater difficulty in determining what is the mind of the Angelic Doctor touching the substantial Forms of such lower animals as live after the abscission of their bodies. But it appears more probable that he did not consider such Forms to be entitatively capable of quantitative totality, and that his words must be interpreted as referring to functional totality (that which he designates as *totalitas virtutis*) in its relation to the quantified matter and organism of the body. Hence, the passage last quoted from his *Question on Spiritual Substances* may be paraphrased in some such way as the following: 'When an animal has such simplicity of organism that its few and simple organs are more or less diffused throughout the body, this body has one Form in act, but many in potentiality; because, by reason of its divisibility into many parts with an organism similar to the whole, the parts are *ipso facto* proximately disposed for the actuation and eduction of their specific Form. It is in consequence of this that such Forms may be considered as functionally extended, because the organs by which they function are extended equally with the extension of the body.' The above explanation is notably confirmed by the comparison which the Angelic Doctor habitually institutes between these and higher orders of animals, the functions of whose Forms are not indefinitely extended over the whole body, but are limited each to a definite localized organ or part in the body. It has the further advantage of reconciling apparently discordant statements of St. Thomas touching this question. It receives powerful additional confirmation from other parallel passages in the various writings of the same Doctor, which it is now proposed to set before the reader. In his last and greatest Work he, as it were, incidentally touches upon the point, while discussing the nature of the human soul. The following is the passage. 'Aristotle reprobates this opinion of Plato,'—viz. that there is a diversity of souls in the distinct organs of the body,—'as regards those parts

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of the' human 'soul, which make use of bodily organs in their operations, from the fact that, in the instance of animals which live after severance, different operations of the soul,—like sense and appetition,—are found in every part[1].' In these last words we seem to find a clear description of the extension which St. Thomas had in his mind. There is a corresponding exposition of the same truth at the end of a passage from the same Work, which will immediately follow the present discussion. The following quotation from another of his writings is yet more striking, especially as he is directly referring to the animals now under consideration. 'Their souls,' he writes, 'because they are more imperfect than other souls, require but little diversity of organs. Hence it is, that a part severed can be receptive of a soul, as having so much of organism as suffices for receiving such a soul[2].' Here, the Angelic Doctor explicitly speaks of the divided part as *receptive* of a soul, because it is of sufficient organism. It would seem, therefore, that he considered the new Form of the severed part to be normally educed out of the potentiality of the matter. But to this interpretation a grave objection may be brought, based upon the preceding and subsequent context. For in the former St. Thomas asserts that 'By the severance of the matter' in these annelids 'the soul remains in each part; since, though it was actually one in the undivided body, it was potentially many[3].' In the latter he subjoins that 'The same sort of thing happens in other similar bodies,—as, for instance, in wood, and stone, water, and air[4].' The former words declare that the Form *remains* in the severed part; while the words last quoted indicate that the case of these animals is on a par with that of inanimate substances, whose divided parts do not evolve a new Form but retain their primitive actuation. To this, however, it must be objected, that

[1] 'Quam quidem opinionem Aristoteles reprobat in lib. 3. de Anima, quantum ad illas animae partes quae corporeis organis in suis operibus utuntur, ex hoc quod in animalibus quae decisa vivunt, in qualibet parte inveniuntur diversae operationes animae, sicut sensus et appetitus.' 1ae lxxvi, 3, *c.*

[2] 'Eorum animae, quia imperfectiores sunt aliis, modicam diversitatem organorum requirunt. Et inde est, quod una pars decisa potest esse animae susceptiva, utpote habens tantum de organis quantum sufficit ad talem animam suscipiendam.' *De Q.* iii, *a.* 12, 5m.

[3] 'Per decisionem materiae anima in utraque parte remanet; quae quidem erat in toto una in actu et plures in potentia.' *Ibid.*

[4] 'Sicut accidit in aliis corporibus similibus, utpote ligno et lapide, aqua et aere.' *Ibid.*

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such an interpretation is at variance with the general teaching of the Angelic Doctor on this point, and is inconsistent with his main argument. Wherefore, as touching the antecedent context, it must be said that St. Thomas describes the Form as *remaining*, because there is no corruption and therefore no generation in the strictest sense of the word, (for this requires a generating agent in order of nature); and 'because the severance is the result of violence[1]' and the matter is proximately disposed for the Form, therefore by the very act of abscission the new Form is evolved. In accordance with this exposition St. Thomas in another place, referring to the same question, says: 'Souls less noble, that have but little diversity in their faculties, perfect a body likewise which is, roughly speaking, uniform in the whole and in the parts; and accordingly on a division of the parts different souls are produced actually in the parts, as is the case with both annelids and plants[2].' In this passage, as we see, the Angelic Doctor expressly states that the Forms in the severed parts are actually produced, or made in act. This quotation, moreover, confirms our main contention; viz. that, according to the teaching of St. Thomas, these living Forms are allied to quantity only by virtue of the functional totality and, as it were, extension which is native to them, and which finds its correlative in the organs constituted by them in the actuation of the matter.

As to the subsequent context, there can be little or no doubt that the *sicut* of the Angelic Doctor symbolizes that special similarity which directly affects his answer to the difficulty proposed; but cannot be extended to the source and manner of the multiplication of the respective kinds of Forms. St. Thomas would be the last to deny that life, even in its most rudimentary Forms, has a unity and corresponding perfection which raises it far above the normal conditions of inanimate substance; and he would be foremost in admitting that the soul even of a worm cannot be judged by the laws which govern the substantial Form of a stone or of water.

Now that an answer has been given to the above difficulty, let

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[1] 'Ex hoc ipso decisio animalis annulosi est violenta et contra naturam.' *Ibidem.*

[2] 'Sed animae minus nobiles quae habent parvam diversitatem in potentiis, perficiunt etiam corpus quod est quasi uniforme in toto et partibus; et ideo ad divisionem partium efficiuntur diversae animae actu in partibus, sicut etiam in animalibus annulosis et plantis.' 1 *d.* viii, *Q.* 5, *a.* 3, 2[m].

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us return to the teaching of the Angelic Doctor respecting these animals that live after severance of their body. In another passage St. Thomas is speaking of annelids (*animalibus annulosis*), and says that 'By reason of the slight difference of organs in these animals, the part is more or less of a nature similar to the whole, and on this account the perfect soul remains in the part as it was in the whole[1].' The *remaining* in this passage evidently refers to the original body after its diminution; for in the preceding context the Angelic Doctor says that when these animals are divided, 'each part is made (or produced) animate, having a distinct soul[2].' Here, then, again the cause of the phenomenon is traced to the functional totality of these animals. Once more: 'For this reason,' he remarks, 'the Form which is wholly in such a whole and wholly in its parts, before division of the continuous is not said to be there manifoldly in act, but only in potentiality; but after division it is multiplied actually, as is seen plainly in annelids[3].' St. Thomas here says of the souls of these annelids, that *they are wholly in the whole body and wholly in its parts;* therefore, in his judgment they are simple Forms even in the composite, and are not entitatively subject to quantitative totality. Finally: In a parallel passage, speaking of the Form of the severed part, he uses the following expression: 'As soon as the body of the said animal has been severed, a soul *begins* to be actually in each living part[4].'

After this not unimportant digression, let us resume the consideration of the teaching of the Angelic Doctor as confirmatory of the *two hundred and thirteenth* Proposition. In his last and most carefully elaborated Work, he thus treats the whole question, with special reference, however, to soul-Forms in general and to the human soul in particular. 'Because the soul is united to the body

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[1] 'Propter parvam differentiam organorum in illis animalibus pars est fere toti consimilis; et ideo in parte remanet anima perfecta, sicut erat in toto.' 2 *d.* xviii, *Q.* 2, *a.* 3, *c.*, *v. f.*

[2] 'Unde quando dividuntur, efficitur quaelibet pars animata habens animam distinctam.' *Ibidem.*

[3] 'Et propter hoc forma quae est tota in toto tali, et tota in partibus ejus, non dicitur ante divisionem continui esse ibi pluries actu, sed solum potentia; sed post divisionem multiplicatur secundum actum, sicut patet de anima in animalibus annulosis.' 4 *d.* x, *a.* 3, *q.* 3, 1^m.

[4] 'Diviso autem corpore animalis praedicti, (scilicet, animalis annulosi), in qualibet parte vivente incipit anima esse actu.' *Cg. L.* II, *c°* 86, 2°.

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as its Form,' he writes, 'it must necessarily be in the whole body and in every part of it; for it is not an accidental Form, but the substantial Form of the body. Now, a substantial Form is not only the perfection of the whole, but of each part. . . . Wherefore, a soul must be in the whole body and in every part of it. And that it is entire in every part of it, may be gathered from what follows; for, seeing that a whole is that which is divisible into parts, there is a threefold totality corresponding with a threefold division. For there is a certain whole that is divisible into quantitative parts; such as, a whole line or a whole body. There is also a certain whole that is divisible into conceptual and essential parts; as, for instance, the thing defined is divisible into the parts of the definition; and the composite is divided into matter and Form. The third is a potential whole, which is divided into functional' (or facultative) 'parts. Now, the first kind of totality is not consonant with Forms, unless *possibly* by accident; and only with such Forms as have an undifferentiated relation to the whole quantified entity as well as to its parts; such as whiteness which, so far as its nature is concerned, is equally disposed to be in the whole superficies and in each part of that superficies. Wherefore, when the superficies is divided, the whiteness is divided by accident. But a Form that postulates diversity in the parts, as a soul does and *especially* the souls of perfect animals, is not equally disposed to the whole and to its parts. Wherefore, it is not divided by accident,—that is to say, by reason of a division of the quantity. But the second totality, which is founded in the perfectness of concept and of essence, is properly and absolutely consonant with Forms. So, in like manner, is the totality of function, because the Form is principiant of operation. . . . Because a soul does not possess quantitative totality, either absolutely or by accident, it suffices to say, that a soul is entire in each part of the body according to the wholeness of its perfection and essence, but not in totality of function; because it is not in each and every part of the body in respect of each and every faculty, but as regards sight, in the eye,—hearing, in the ear,—and so on, for the rest. Nevertheless, it is to be observed that, forasmuch as a soul postulates diversity in the parts, it is not related in the same way to the whole and to the parts; since it is related to the whole primarily and absolutely as to its proper and proportioned perfectible, but to the parts consequently, forasmuch as the parts are in order to

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the whole[1].' The reader is requested to notice the words which have been italicized. They, like others of a similar kind in other passages, are expressive of a state of doubt touching the question in its relation to the lower animals, which deserves notice. In the above quotation, then, we are taught that Forms are not capable of quantitative totality, save *possibly* by accident; and that souls are not capable of it even by accident. But these latter are capable of functional totality; as they evidently are, like the rest, of conceptual and essential totality. Here, then, we find the *functional* totality mentioned in the *two hundred and fourteenth* Proposition. In order to discover the *presential* totality, as it has been called in the same Proposition, we must betake ourselves to another place. In answer to an objection,—that the soul is extended and therefore cannot be entire in every part of the body; and that it is extended, because Aristotle declares, *I judge a soul to exist as extensively as the space of the body allows of its existing*[2],—St.

[1] 'Quia anima unitur corpori ut forma, necesse est quod sit in toto et in qualibet parte corporis; non enim est forma corporis accidentalis, sed substantialis. Substantialis autem forma non solum est perfectio totius, sed cujuslibet partis. . . . Unde oportet animam esse in toto corpore et in qualibet ejus parte. Et quod tota sit in qualibet parte ejus, hinc considerari potest; quia cum totum sit quod dividitur in partes, secundum triplicem divisionem est triplex totalitas. Est enim quoddam totum quod dividitur in partes quantitativas, sicut tota linea vel totum corpus. Est etiam quoddam totum quod dividitur in partes rationis et essentiae; sicut definitum in partes definitionis, et compositum resolvitur in materiam et formam. Tertium autem totum est potentiale quod dividitur in partes virtutis. Primus autem totalitatis modus non convenit formis nisi forte per accidens, et illis solis formis quae habent indifferentem habitudinem ad totum quantitativum, et partes ejus; sicut albedo, quantum est de sui ratione, aequaliter se habet ut sit in tota superficie et in qualibet superficiei parte. Et ideo, divisa superficie, dividitur albedo per accidens. Sed forma quae requirit diversitatem in partibus, sicut est anima et praecipue animalium perfectorum, non aequaliter se habet ad totum et partes; unde non dividitur per accidens, scilicet per divisionem quantitatis. Sic ergo totalitas quantitativa non potest attribui animae nec per se nec per accidens. Sed totalitas secunda, quae attenditur secundum rationis et essentiae perfectionem, proprie et per se convenit formis. Similiter autem et totalitas virtutis; quia forma est operationis principium. . . . Sed quia anima totalitatem quantitativam non habet nec per se nec per accidens, ut dictum est (in isto art.), sufficit dicere quod anima tota est in qualibet parte corporis secundum totalitatem perfectionis et essentiae, non autem secundum totalitatem virtutis; quia non secundum quamlibet suam potentiam est in qualibet parte corporis, sed secundum visum in oculo, secundum auditum in aure, et sic de aliis.' 1ae lxxvi, 8, *o*. Cf. *Anima*, *a*. 10, *o*.

[2] 'Praeterea, nulla forma quae extenditur secundum extensionem materiae, est tota in qualibet parte suae materiae. Sed anima extenditur secundum extensionem materiae. Dicitur enim in libro de quantitate Animae, Tamen aestimo esse animam, quantum eam spatia corporis esse patiuntur.' *Spiritu*, *a*. 4, *argum*. 5m.

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Thomas observes as follows: 'That authority is not to be so understood, as though the human soul were extended after the manner of the extension of the body; but that the virtual quantity of the soul is not produced beyond that of the body[1];—that is to say, in other words, that the present entity, or *presentiality*, (if the word may be allowed), of a soul is limited to the circumference of its body. So much for the *two hundred and thirteenth* Proposition.

iv. Passages have already been presented under the preceding number, which reveal the mind of the Angelic Doctor concerning the souls of inferior animals. Two others shall be added. 'Annelids,' he writes, 'live when divided, not only because the soul is in every part of the body, but because their soul, by reason of its imperfection and of the fewness of its operations, requires little diversity in the parts; which diversity is discoverable in the severed part of the living animal.' Hence, as it retains the disposition by which the integral body is capable of being perfected by the soul, the soul *remains* in it.[2] So, once more: 'It is also plain,' he writes, 'that a soul is not divided by a division of the continuous, *especially* the souls of perfect animals which, when divided, do not live. For *it may possibly be different* in the case of annelids, in which there is one soul in act and several in potentiality, as the Philosopher teaches us in the second Book of his *De Anima*[3].' So much will suffice for the *two hundred and fourteenth* Proposition.

v. One point of the teaching of the Angelic Doctor, connected with the subject-matter of the present Section, has been reserved to the last on account of its peculiar interest and importance, in face of the current theories of the day; although it is adduced in confirmation of an earlier Proposition. In the declaration of the fourth Member of *the hundred and thirteenth* Proposition it is virtually affirmed, that all brute animals whatsoever are wholly deter-

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[1] 'Ad quintum dicendum, quod auctoritas illa non sic intelligitur quod anima humana extendatur secundum extensionem corporis; sed quod virtualis animae quantitas non porrigitur in majorem quantitatem quam corporis.' *Ibidem* 5m.

[2] 'Animalia annulosa decisa vivunt, non solum quia anima est in qualibet parte corporis; sed quia anima eorum, cum sit imperfecta et paucarum actionum, requirit paucam diversitatem in partibus; quae etiam invenitur in parte decisa a vivente. Unde, cum retineat dispositionem per quam totum corpus est perfectibile ab anima, remanet in eo anima.' *Anima, a.* 10, 15m.

[3] 'Planum est etiam quod non dividitur divisione continui; praecipue anima animalium perfectorum, quae decisa non vivunt. Secus enim esset forte de animabus animalium annulosorum, in quibus est una anima in actu et plures in potentia, ut Philosophus docet (2 de Anima).' *Ibid. c., v. f.*

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mined in their functions by quantitative totality,—in other words, that they have no functions which do not necessarily require a definite bodily organ for their exercise. So much is evidently implied; because the only exceptions there made are the two human faculties of intellect and will. Yet, on the other hand, there are certain well-known natural facts that appear to militate against such a conclusion. Some higher kinds of animals seem to possess a sort of forestalling of intellect and will. They have the faculty of apprehending what is suitable and what harmful to their nature, not only in the individual instance objected before their senses but under something like a generic form. Thus, for instance, a mouse apprehends cat in general to be hurtful to it, not *this* cat only with its individual notes. In like manner, certain animals are known to forsake that which is pleasurable to sense for an object that is necessarily accompanied with considerable pain; as, for example, when stags forsake pairing in order to do battle. To these may be added the peculiar powers of imitation in some animals, which are not always limited to a literal copy of the original, but are able to accommodate themselves to circumstances. Again: Some animals exhibit strong attachments and strong aversions, which not unfrequently arise on first acquaintance[1]. It may, then, seem at first sight open to doubt whether, in eliciting such acts, the faculties brought into play are subject to any particular organ: since no external organ of which we are cognizant would serve the purpose.

Now, first of all, it must not be supposed that the Angelic Doctor was ignorant of these and similar facts upon which as upon their basis certain strange modern theories rely. On the contrary, he makes full account of them in his animal psychology. Thus, for instance, while alluding to the intercommunication that exists between the various realms of being, he observes: 'Animals are joined on to man by the estimative faculty which is what in them is highest, by which they elicit something like the operations of reason[2].'

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[1] Mr. Darwin in his *Descent of Man* has collected a number of most interesting facts in relation to this subject. This Work includes a double element; viz. a collection of valuable observations and amusing anecdotes about animals, and a view, (it hardly deserves the name of a theory), tagged on to the rest, which does scant justice to the ingenious author of *The Origin of Species*. It almost seems as though added by way of emblazonment.

[2] 'Sicut animalia continuantur hominibus in vi aestimativa, quae est supremum in eis, secundum quam aliquid simile operibus rationis operantur.' 3 *d.* xxxv, *Q.* 1, *a.* 2, *q.* 2, 1[m].

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We shall see presently what he understands this *estimative faculty* to be. So again, at much greater length: 'As well on the part of the apprehensive faculties as on the part of the appetitive faculties of the sensitive part, there is something belonging to the sensitive soul,'—that is to say, the soul of certain animals,—'in accordance with its own proper nature; and something, on the other hand, belonging to it by virtue of its having a sort of participation of reason. . . . Thus, for instance, the imaginative faculty belongs to the sensile soul in accordance with its own proper nature; because in it the forms received through the senses are retained. But the estimative faculty, by which an animal apprehends cognitions that are not received from the senses,—as for instance, friendship or enmity,—is in the sensitive soul accordingly as it has some sort of a participation of reason. Hence, by virtue of this *estimation* animals are said to have a sort of prudence, as is shown in the beginning of the *Metaphysics;* as, for instance, that a sheep flees from a wolf whose enmity he has never experienced. The case is similar as regards the sensitive part. For that an animal should seek that which is agreeable to the senses, (which belongs to the concupiscent part), is in unison with the proper nature of a sensile soul; but that, deserting what is agreeable, it should seek after victory which it gains at the expense of pain, (which belongs to the irascible part), accrues to it because after a certain sort it borders upon a higher order of appetite,'—that is to say, the will. 'Hence, the irascible approaches nearer to reason and will than the concupiscent[1].' In a parallel passage St. Thomas illustrates the concluding remarks of the last quotation by instancing animals 'who seek a fight with

[1] 'Sciendum est autem, quod tam ex parte apprehensivarum virium quam ex parte appetitivarum sensitivae partis, aliquid est quod competit sensibili animae secundum propriam naturam; aliquid vero, secundum quod habet aliquam participationem modicam rationis: . . Sicut vis imaginativa competit animae sensibili secundum propriam rationem' (naturam?) 'quia in ea reservantur formae per sensum acceptae; sed vis aestimativa, per quam animal apprehendit intentiones non acceptas per sensum, ut amicitiam vel inimicitiam, inest animae sensitivae secundum quod participat aliquid rationis. Unde ratione hujus aestimationis dicuntur animalia quamdam prudentiam habere, ut patet in principio Metaphysicorum; sicut quod ovis fugit lupum, cujus inimicitiam nunquam sensit; et similiter ex parte sensitivae. Nam quod animal appetat id quod est delectabile secundum sensum, quod ad concupiscibilem pertinet, hoc est secundum propriam rationem sensibilis animae; sed quod relicto delectabili appetit victoriam, quam consequitur cum dolore, quod ad irascibilem pertinet, competit ei secundum quod attingit aliqualiter appetitum superiorem; unde irascibilis est propinquior rationi et voluntati quam concupiscibilis.' *Verit. Q.* XXV, *a.* 2, *c.*, *v. f.*

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another animal, or face up to any other whatsoever difficulty[1].' So, once more,—treating the matter, as it were, *à priori*,—he writes as follows: 'It is necessary for an animal to pursue or avoid some things not only because they are agreeable or disagreeable to sense, but likewise because of certain other advantages and benefits or banes; as, for instance, a sheep flees when it sees a wolf coming, not by reason of an incongruity of colour or shape, but as a natural enemy; and, in like manner, a bird collects straw not because it may be pleasing to sense, but because the straw is useful for the purpose of constructing its nest[2].'

The Angelic Doctor admits, then, that there is in certain animals a foreshadowing of the intellect and will of a spiritual nature; and he discovers the former in the estimative faculty and the memory, the latter in the pursuit of that which is not agreeable to their sensile nature. These two phases of the question practically resolve themselves into one; for, though there can be intellect where there is not full freedom of the will, yet there can be no freedom of the will without intellect. Now, the Angelic Doctor admits that these nobler animals do receive cognitions which are not received from the senses, and that they possess the two aforesaid faculties to which these cognitions are assigned. 'In order,' he writes, 'to be able to apprehend the cognitions which are not received from sense, the estimative faculty is ordained; and in order to be capable of retaining them, the memory[3].' Hence, as we have seen in one of the quotations just made, he ascribes to these animals a sort of *prudence*, understanding by prudence a practical judgment that what conduces to the natural end is to be pursued, what is prejudicial to such end is to be avoided, prescinding from the question whether the said judgment is instinctive or rational. Furthermore, he teaches that man has two similar faculties to the same end; but he alters the names. The former he designates as the *cogitative faculty*, or *par-*

[1] 'Sicut quod animal appetat pugnam cum alio animali, vel aggredi aliam quamcumque difficultatem.' 3 *d.* xxvi, Q. 1, *a.* 2, *c.*, *v. m.*

[2] 'Sed necessarium est animali ut quaerat aliqua vel fugiat, non solum quia sunt convenientia vel non convenientia ad sentiendum, sed etiam propter aliquas alias commoditates et utilitates, sive nocumenta; sicut ovis videns lupum venientem fugit, non propter indecentiam coloris vel figurae, sed quasi inimicum naturae; et similiter avis colligit paleam, non quia delectet sensum, sed quia est utilis ad nidificandum.' 1ae lxxviii, 4, *c.*, *init.*

[3] 'Ad apprehendendum autem intentiones quae per sensum non accipiuntur, ordinatur vis aestimativa; ad conservandum autem eas vis memorativa.' 1ae lxxviii, 4, *c.*, *p. m.*

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ticular reason; the latter, *reminiscence.* Why this change of nomenclature?

The question proposed offers a sore temptation to wander off into the fields of psychology. But this would involve a violation of that international law which obliges the sciences. As it is, the answer that shall be given must be accepted as a *Lemma* from psychology, and will be limited according to the exigency of the metaphysical truth which is under present consideration. How can we hope to do it better,—more consonantly with the title and professed object of this Work,—than by giving ourselves up to the guidance of the Angelic Doctor?

The one reason, then, why this difference of nomenclature has been introduced, is traceable to the fact, that intellect directs these faculties in man; instinct, in brutes. Since, therefore, the process of the two faculties is different in man and brute, there is need of a nominal distinction. 'For other animals,' writes St. Thomas, 'perceive cognitions of this kind,'—that is to say, such as are not derivable from the senses,—'by a certain natural instinct; while man' perceives them 'by a certain collation [1],' or inference. To this process of inference St. Thomas adds in other place 'The process of investigation [2].' But these, it may be objected, are mere assertions. In the instance of man alike and of the brute the results of these faculties are the same; or, at the least, so far the same that the one argues a mere development from the other. *Instinct* and *intellect* are mere names,—the former, in particular, to protect a foregone conclusion. If a man builds himself a commodiously constructed house; so do trap-door spiders, ants, bees, birds. If a man has his friendships and dislikes; so have the dog, the cat, the elephant, the horse. In the beast, therefore, we are in presence of those same faculties, only under a rudimentary form, which are vainly supposed to be characteristic of man. St. Thomas replies, that there are three classes of facts which give the lie to such a hypothesis, even within the narrow limits of the present investigation. In the first place, the judgment that brute animals evoke touching that which is conducive to their good or otherwise, is not free. 'They act,' says the Angelic Doctor, 'according to a

[1] 'Alia animalia percipiunt hujusmodi intentiones solum naturali quodam instinctu, homo autem per quamdam collationem.' 1^ae^ lxxviii, 4, *c., p. m.*

[2] 'Homo autem per investigationem quamdam et collationem hujusmodi rationes considerat.' 2 *d.* xxiv, *Q.* 2, *a.* 2, *c., init.*

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judgment that is not free[1].' But how so? The same Doctor answers, On the apprehension of what is useful or harmful, their impulse is the result of their natural operation. They do not command their movement[2]. Thus, for instance, the wolf may have been caught in a trap, and have become thereby comparatively harmless; yet the sheep will flee. It has its natural judgment about the wolf, and instinctively obeys the direction of such judgment. To the same cause must be ascribed that which has been called the treachery of certain pet animals,—for instance, parrots and squirrels,—evinced towards those who have been intimate with them for a considerable time. Accordingly, St. Thomas compares their actions to that of infants, 'when they seek the breast[3].' The natural food of the child may have become deleterious from a variety of causes that might easily be known to one who exercised his reason; but the babe, without instruction and without questioning, instinctively seeks its nourishment according to the order prescribed by nature. It is in no sense master of its impulse. In the next place, St. Thomas proves his point from the uniformity of operation observable in animals of the same species. 'All animals,' he says, 'of the same species perform similar operations;—as, for instance, every spider makes a like web;—which would not be the case, if out of their own heads they arranged their work, as though labouring by art[4].' Hence it comes to pass that spiders construct their webs as they have done from the beginning; and no one differs from, or improves upon, his fellow, nor does one kind of spider borrow his architecture from another. There is a great deal of stationary ingenuity, but there is no mental invention. Lastly, there is this marked difference between the nature of the said practical judgments in man and in the brute, that 'Brute animals at the beginning of their life receive a *natural estimation* in order to

[1] 'Quaedam autem agunt judicio, sed non libero, sicut animalia bruta.' 1ae lxxxiii, 1, *c.*

[2] 'Unde ordinantur ab alio ad agendum, non autem ipsa seipsa ordinant ad actionem. Et ideo in eis est impetus, sed non imperium.' 1-2ae xvii, 2, 3m. See the whole of this answer.

[3] 'Et talis naturalis instinctus est etiam in pueris; unde etiam mamillas accipiunt, et alia eis convenientia, etiam sine hoc quod ab aliis doceantur.' 2 *d.* xx, *Q.* 2, *a.* 2, 5m.

[4] 'Ideo ex determinatione naturae actus suos exercent, non autem ex propria determinatione agentis. Unde omnia ejusdem speciei similes operationes faciunt, sicut omnis aranea similem facit telam; quod non esset, si ex seipsis quasi per artem operantes sua opera disponerent. Et propter hoc in eis non est liberum arbitrium.' 2 *d* xxv, *a.* 1, 7m.

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know that which is hurtful and that which is suitable, because they cannot attain to this by their own investigation[1];' whereas man is left to form these judgments gradually by the practical experience of life. Hence it is that at the outset he is the most helpless of animals. A young swallow would find little difficulty in constructing a nest according to the usage of its tribe; but a child would be sore put to if it were compelled to construct its own habitation. It is for these reasons principally that the Angelic Doctor distinguishes between animal instinct and human sagacity.

But,—to conclude this difficulty and to establish the truth of the Member in question, by the authority of the Angelic Doctor;—even in the instance of man St. Thomas limits this estimative faculty to a special organ. 'In man,' he writes, 'it is called the *particular reason*, and medical men assign to it a determinate organ which is in the middle of the brain[2].' If in man, *à fortiori*, in brutes.

It now only remains to present the teaching of St. Thomas embodied in this Proposition before the eye of the reader under a synoptical Form.

a. The human soul, as well as the souls of the nobler orders of animals, are not entitatively subject to quantitative totality either absolutely or by accident. They are, nevertheless, both subject to quantitative totality functionally after a manner,—the human soul partially, the souls of brutes entirely,—in such wise that those functions which are sensile, and therefore common to both, are limited to certain definite organs, not as though they were capable of quantitative division in themselves. Thus are to be understood the words of St. Thomas: 'It remains, therefore, that, in the soul of man and of every perfect animal whatsoever, no totality can be admitted save that which is in order of specific perfection and in order of function or faculty[3].'

b. The souls of inferior animals are not, in strictness of speech, entitatively subject to quantitative totality; though they may be

[1] 'Animalia bruta in sui principio accipiunt naturalem aestimationem ad cognoscendum nocivum et conveniens, quia ad hoc ex propria inquisitione pervenire non possunt. Homo autem ad haec et multa alia potest per rationis inquisitionem pervenire. Unde non oportuit quod omnis scientia naturaliter insit.' *Verit. Q.* xviii, *a.* 7, 7^m.

[2] 'Unde etiam dicitur *ratio particularis*, cui medici assignant determinatum organum, scilicet mediam partem capitis.' 1^ae lxxviii, 4, *c.*, *v. fi.*

[3] 'Relinquitur igitur quod in anima hominis et cujuslibet animalis perfecti, non potest accipi totalitas nisi secundum perfectionem speciei et secundum potentiam seu virtutem.' *Anima, a.* 10, *c.*, *v. f.*

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said to be so in a certain way, inasmuch as their organs are more or less diffused throughout the whole body and in consequence their psychical functions are extended (so to say) with the extension of the body. Hence, when a severance is made in their bodies, the severed parts live an independent life. St. Thomas seems to have remained in uncertainty,—as his repeated expressions of doubt serve to show,—whether these Forms are entitatively subject to quantitative totality by accident, and consequently whether their soul is divided with the division of the body, or whether a new Form is evolved out of the separated part. The evidence inclines one to the opinion that he held this latter view as the more probable of the two.

c. St. Thomas includes plants in the same category with these annelids, so far as the present question is concerned; as may be gathered from a passage taken from his Commentary on the first Book of the *Sentences*, (d. viii, Q. 5, a. 3, 2^m), quoted under the second number of the third Section.

d. The substantial Forms of inanimate bodies are subject to quantitative totality by accident; forasmuch as by division of the body the Form becomes present under two limits instead of one and is, consequently, divided.

e. Qualitative Forms are subject to quantitative totality by accident, because they immediately inhere in quantity. Like all other Forms they are essentially the same in the whole and in each part; yet, after division, they are quantitatively and, therefore, intensively less in a part than in the whole.

PROPOSITION CCXVI.

The formal co-existence with the principal and adequate Form of certain partial substantial Forms in one and the same body, which correspond with the partial functions of the principal Form and are subservient to it, would be useless, and is, at the least naturally, impossible.

Declaration of the Proposition.

The preceding Theses of this Section have prepared the way for the main questions mooted in this and the next Propositions. The truth of both has been already established at the beginning of the present Article, where it was proved in general that under

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no conceivable circumstances can more than one substantial Form actuate one body. Nevertheless, as the opinion here impugned assumes a peculiar shape of its own, it may be well at the outset to state succinctly what it is. It has been maintained, then, that in living bodies there exist in the several dissimilar parts and organs of the body several Forms specifically and actually distinct from each other and from the principal Form which they subserve as its dispositions. The patent fact of a complexity of function, augmenting with the nobility of the Form, has evidently given occasion to this strange theory. If the apparent functional and structural diversity of fruit, flower, leaf, could have seduced such a one as Suarez into the opinion that the plant-Form was entitatively composite; it can hardly be matter of surprise that others should have gone a step further, and have resolved these putative virtual components of the Form into so many partial Forms entitatively distinct.

But, first of all, such supposed dispositions are wholly unnecessary; since the one substantial Form has its faculties, as we have already seen, by which itself energizes in the various organs. Besides, the co-existence of these partial Forms is,—to say the least,—*naturally* impossible. For, (omitting the previous demonstrations that two substantial Forms cannot simultaneously actuate the same portion of matter), such co-existence would destroy functional unity. Either these partial Forms energize in co-operation with the principal Form or they do not. If they do, they are useless; if they do not, how could the different sensations, for instance, in different organs received by specifically distinct Forms be reduced to a common focus so as to represent one common object? To take an instance:—a *hound* perceives a particular smell by one Form,—colour, form, motion, by another,—sounds from parting grass, twigs, and the like, by a third; how can it synthesize these several sensile impressions so as to refer them all to the *fox*? The answer might be made, that such reduction to unity is effected by the principal Form. But how is this possible, if this latter Form is specifically distinct from, and does not co-operate with, its subordinates? Again: On supposition of the truth of this hypothesis, any animal or living thing whatsoever could be physically divided into a multitude of animals or living things specifically distinct from each other. The *Antecedent* is thus declared. If each organ were severed from the original

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body, it would still retain its own substantial Form which, though partial relatively to the whole, is not partial relatively to the particular organ. Its partiality, therefore, would cease by virtue of its severance from the integral body; but, since it is specifically distinct from the principal Form and is itself a substantial Form exclusively actuating such organ or part, there is no assignable reason why it should not continue its existence in union with its organ, somewhat in the same way as the *gonosomes* and *trophosomes* of the coral. Accordingly, the world would be stocked with living leaves, roots, flowers, ears, eyes, noses, hearts, stomachs, etc., each enjoying a separate and independent existence. Finally, it may be added, in confirmation of the previous arguments, that in this hypothesis unity of being would be more imperfect as material entities ascend in the scale of being; since partial Forms would multiply in the same composite in exact proportion to the complexity of function.

The Angelic Doctor maintains the truth of the present Thesis in the following passage: 'A soul does not presuppose other substantial Forms in the matter, in order to give substantial being to the body or to its parts. On the contrary, both the entire body and all its parts have substantial and specific being by means of the soul; on the withdrawal of which, just as neither man remains nor animal nor living thing, so neither does hand nor eye nor flesh nor bone remain, unless equivocally as in a picture or a statue[1]';—that is to say, these latter under the corpse-Form preserve their outward shape and appearance as in a picture or a statue, but they are functionless and specifically other from what they were before.

PROPOSITION CCXVII.

The substantial Forms of the elements do not actually remain in mixed, or compound, substances.

Prolegomenon.

It is necessary to a true understanding of the Scholastic

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[1] 'Anima non praesupponit alias formas substantiales in materia, quae dent esse substantiale corpori aut partibus ejus; sed et totum corpus et omnes ejus partes habent esse substantiale et specificum per animam; qua recedente, sicut non manet homo aut animal aut vivum; ita non manet manus aut oculus aut caro aut os nisi aequivoce, sicut depicta aut lapidea.' *Spiritu. a. 4, c., init.*

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doctrine concerning the constitution of bodies, that the phrase, *mixed bodies*, as employed by the Doctors of the School, should be rightly understood. The term is not limited by them to the sense in which it is now used by chemists; but is specially applied to those compound bodies which are the result of chemical combination. This will be shown immediately in a citation from the Angelic Doctor. Avicenna, against whose opinion the present Thesis is mainly directed, maintained that the substantial Forms of the elements, or simple bodies, remain actually in the compound substance and that the mixture is accidental,—that is to say, that these compounds are a mere combination of the qualities proper to the respective elements. Against this theory St. Thomas argues in several of his Works; but there is one passage in particular which it will be serviceable to quote here. The hypothesis of Avicenna, he argues, 'Is impossible; for the different Forms of the elements cannot exist except in different portions of matter. But in order to the diversity of these portions it is necessary to recognize dimensions; for without these matter is incapable of division. Matter, however, that is subject to dimension is discoverable only in a body. But different bodies cannot exist in the same place. Hence it follows, that the elements in the mixed body are distinct according to position; and thus there can be no true mixture which is according to the entire substance, but a sensible mixture which consists of molecules in juxtaposition[1].' With such accuracy does the Angelic Doctor distinguish between chemical compounds, (which he calls true mixtures), and the mechanical mixtures of modern chemistry, (which he calls mixtures in appearance).

We must here mention another opinion touching this question, which was maintained by Averrhöes, the greatest of the Arabian Peripatetics. According to him the Forms of the elements are the most imperfect of all substantial Forms. Wherefore, they are half way, as it were, between substantial and accidental Forms, so as to admit of increase and diminution. Accordingly, in the com-

[1] 'Sed hoc est impossibile; quia diversae formae elementorum non possunt esse nisi in diversis partibus materiae, ad quarum diversitatem oportet intelligi dimensiones, sine quibus materia divisibilis esse non potest. Materia autem dimensioni subjecta non invenitur nisi in corpore; diversa autem corpora non possunt esse in eodem loco. Unde sequitur quod elementa sint in mixto distincta secundum situm; et ita non erit vera mixtio quae est secundum totum, sed mixtio ad sensum, quae est secundum minima juxta se posita.' I^ae lxxvi. 4, 4^m.

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pound they become relaxed in energy by mutual reaction, and conspire towards the production of the substantial Form of the compound. Against both these opinions the truth of the present Thesis must be established.

Declaration of the Proposition.

i. The argument of St. Thomas against the first opinion,—that of Avicenna,—is irrefragable. It is naturally impossible that more than one body should occupy one and the same place by reason of their mutual impenetrability. But the said opinion supposes more than one body to occupy one and the same place. Therefore, etc. The *Minor* is thus proved. Diverse substantial Forms postulate as their respective Subjects diverse portions of matter and, because diverse portions of matter, diverse bodies. For there can be no portioning of matter without dimensions; and matter with dimensions is a body. On the other hand, these bodies must be in one and the same place; because they are supposed to exist inseparably together in the one place of the compound. If they do not so exist, they must be in mere juxtaposition,—like wine and water, or oxygen and nitrogen in the air,—and consequently do not form a true compound. Further,—to borrow another argument of St. Thomas[1],—each substantial Form requires its own proper dispositions. But it is impossible that separate dispositions, often mutually repugnant, should exist in the same Subject. Thus, for instance, the Forms of sulphur and hydrogen respectively require repugnant dispositions; for sulphur in a natural state is a solid, has a yellow colour, assumes crystalline shapes, while hydrogen is a gas, colourless, and incapable of crystallization.

ii. The opinion of Averrhöes is refuted by the following arguments of the Angelic Doctor[2]. First of all, the substantial entity of any body is indivisible; so that a substantial Form which determines the specific substantial entity of a body is not capable of increase or diminution. Accordingly, Aristotle in his *Categories* expressly excludes *more* and *less* from the Category of Substance. Secondly, the existence of a hybrid Form,—half substance, half accident,—is impossible; for on its one side it would be essentially presupposed to the composite, on the other, the composite would

[1] *Opusc.* XXXIII (*aliter* XXIX), *De mixtione Elementorum.*
[2] *Ibidem.*

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be essentially presupposed to it as being its Subject. Besides, substantial Forms are in matter but not in an integral Subject, whereas accidental Forms are in the integral substance. Lastly,—to quote the words of St. Thomas,—'It is ridiculous to talk of a medium between things which do not belong to the same Category; because the medium and its extremes must belong to the same Category, as is proved in the tenth Book of the *Metaphysics*[1].'

§ 4.

The possibility of a multiplication in the same composite of substantial Forms which are independent of each other.

PROPOSITION CCXVIII.

It is impossible that two or more independent substantial Forms should simultaneously actuate one and the same portion of matter.

This Proposition has been subjoined, in order to exhaust the number of possible cases wherein a multiplication of substantial Forms in one and the same composite is supposable. But it needs no declaration; since its truth has been already abundantly established in the earlier Theses of the present Article.

ARTICLE VIII.

The Metaphysical Form.

Having ended the discussions touching physical substantial Forms; it follows in order, previous to approaching the consideration of accidental, that we should determine the nature of metaphysical, Forms. For these latter are identified with the essences of things and, in consequence, are more cognate than accidents with the physical substantial Form.

It must be clearly understood at the outset, that the terms, *Composite*, *Form*, *Subject*, etc., when used in a purely metaphysical sense, are analogical in their application; since the ideas which they represent are primarily representative of those physical entities from which they have been originally derived. The sub-

[1] 'Item ridiculum est dicere medium esse inter ea quae non sunt unius generis; quia medium et extrema oportet ejusdem generis esse, ut probatur in 10 Metaph.' *Ibidem, p. m.*

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stantial Form and the matter are real physical parts constitutive of a real physical whole, and are only inseparable *de potentia absoluta* because they are mutually necessary to each other's existence by reason of their substantive imperfection. But the metaphysical Form and Subject are not real *parts,* though they are *entitatively* real; neither do they constitute a real composite. Perhaps the above statement stands in need of a short explanation. Let us then very briefly recall the ideas about matter and Form which, it is to be presumed, have been now sufficiently precised. The material cause, as it exhibits itself in material substances, is something undetermined in itself but capable of, and essentially disposed towards, determination,—something receptive of actuation, —something inchoative,—in a word, Subject of natural differentiation. The formal cause or Form, on the other hand, is a determining principiant,—an act,—constitutive of the specific nature, —the perfection, the beauty and splendour, of Being. Accordingly, wherever in the objective concept there is presented to the mind in what way soever the indeterminate, the inchoative, or the passively potential, there the concept of a Subject naturally arises. On the other hand, wherever in the objective concept there is presented to the mind the determinating, the perfect, the actuating, the actual, there the concept of a Form naturally arises. Form fashions the world, surmounts the world, and finds its full expression in the Infinite Who is Act Itself. Thus apparisoned, we may safely enter upon the present discussion.

PROPOSITION CCXIX.

The metaphysical Form is twofold, in accordance with a twofold metaphysical composition.

Declaration of the Thesis.

Every essence may be metaphysically regarded in two ways. It may be considered as a whole in the abstract, yet connoting a transcendental relation to *suppositi;* or it may be considered analytically as determined to its specific nature by its ultimate specific difference. Both these ways of contemplating it are founded in reality; yet they are very different in the respective concepts by which they represent essence. In the former case the metaphysical

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composite will be the entire abstract essence conceived as united to supposit,—not to *this* or *that* individual supposit, but to *indeterminate* supposit; in the latter case, the entire essence is resolved into its material and formal parts, and the composite consists in the synthesis of these two metaphysical parts. To take an instance, by way of illustration: *Vegetativeness* is an entire essence, considered in the abstract; yet connoting a transcendental relation to a supposit in general,—that is to say, (because it is a *substantial* essence), to a subsistent existence on its own account, without support from, or a belonging to, any other entity. The metaphysical composition of these two will be *vegetable*, which is vegetativeness in the concrete. Such metaphysical composition and corresponding concept of a metaphysical Form are conceivable of all finite being, and not of substance only. Wherefore,—to describe it as it is in its transcendental universality,—it may be said that *being* is the material part, and the essence by which *being* is determined to *this specific being* is considered as the metaphysical Form. The former is the *quod*, the latter the *quo*, of the School. Thus, for instance, *whiteness* is the Form by which an accidental being is *white*. On the other hand, the concept *vegetativeness* may be analyzed, and separated into that which is common to it with other grades of being and that which is specifically determinative of its own essence. For instance,—for the analysis differs according to the line of abstraction, or relationship with other grades of being, that may have been selected,—*vegetativeness* is seen to include the general concept of *life*, and the determining concept of the *vegetable* form of life. The union of these two metaphysical parts, resulting in *vegetative life*,—constitutes a metaphysical composition plainly different from the former; for in the one the metaphysical Form of the composite is the entire essence; in the other, the entire essence is the composite and the specific difference the Form.

The Angelic Doctor sets forth this twofold concept with his usual succinctness. 'There is a twofold limitation of a Form,' he writes, 'one by which the specific Form is limited to the individual,' in a way to be explained presently. 'And such limitation of the Form is by means of the matter. There is another' limitation 'by which a generic Form is limited to a specific nature. Such limitation of the Form is not made by matter, but by a more determinate Form from which the difference is assumed. For the

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difference, added over and above the genus, contracts it to species[1].' It is true that he is here alluding, in the former of these two divisions, to material Forms and their physical individuation; but the principle will apply equally, as will be seen, to the metaphysical composition first mentioned.

The nature of these respective metaphysical Forms will be better understood, now that we proceed to consider them separately.

PROPOSITION CCXX.

Substance is metaphysically composed of its integral essence and supposit; and in such composition the integral essence is the metaphysical Form, while the supposit may be considered as the material cause.

PROLEGOMENON I.

As no science deals with individuals, as such, but with universals; *à fortiori* Metaphysics, the queen of the sciences, cannot admit individuals into its subject-matter. If such, then, is the case, how can it *ex professo* deal with *supposit* which connotes the individuation of its substantial Subject? Again: It has been enforced in the first Book that Metaphysics treats of essences, not of existences; forasmuch as the latter are contingent and mutable, whereas the former are necessary and eternal. Yet here existences seem to be the metaphysical composites that are the exclusive subject of the present Proposition. It is to be observed,—in order to obviate that which might otherwise prove a difficulty,—that, (as there has been occasion to remark before), Metaphysics does not concern itself with the individual and existent as a physical fact, but as a real entity having its own nature. But again: Though supposit connotes individuation, and after a manner existence, like all other realities; yet its objective concept is separate from both. Accordingly, we can consider supposit as a universal concept and prescind, as in the case of other abstract ideas, from its actual existence. Regarded as such, it is a universal, embracing

[1] 'Duplex est limitatio formae. Una quidem secundum quod forma speciei limitatur ad individuum; et talis limitatio formae est per materiam. Alia vero secundum quod forma generis limitatur ad naturam speciei; et talis limitatio formae non fit per materiam, sed per formam magis determinatam, a qua sumitur differentia; differentia enim addita super genus contrahit ipsum ad speciem.' *Spiritu.* a. 1, 2[m]. Vide *Ibidem*, 8[m].

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indifferently all substance as being the natural perfection of the latter.

Prolegomenon II.

The two concepts, *Supposit* and *Person*, will be treated at length in their own proper place. Suffice it here to repeat the definition of the former given in the Glossary at the end of the first Volume, and to add a word or two about the latter. 'Supposit is a substance complete in its nature alike and in its substantiality, and consequently, master of itself and incommunicable to another in such wise as to become that other's nature. Sometimes, as in the present Proposition, the word *supposit* expresses this individual autonomy, as abstracted from the substantial nature of which it is the perfectionment. When the substance so perfected is an intellectual nature, it is called *person*, and the substantial mode by which it is so perfected is called *personality*. (See the word, *Personality*, in the Glossary to the first Volume). From what has been stated it is plain that a supposit supposes individuation; for a nature, as such, is communicable to many. As subsisting, it is incommunicable to others after the manner of an accident; as supposit, it is incommunicable as a nature to some other supposit, and this supposes the individual distinctness of the one from the other.

Prolegomenon III.

The metaphysical essence differs from the physical,—or better, the essence considered metaphysically differs from that same essence considered physically,—in more ways than one; but more particularly, (so far as material substances are concerned), in this: In the former, matter enters only, as it were, implicitly and not as one of the parts; whereas in the physical essence matter enters as one of the essential constituents. Thus, *man* physically defined is *a rational soul informing an organized body*; defined metaphysically, he is *a rational animal*, just as *humanity* is defined to be *rational animality*. In these two latter definitions the *body* or *matter* only enters as confusedly included under the concepts, *animal* and *animality*.

Prolegomenon IV.

It will be useful to repeat here a remark that has been made in an earlier part of this Volume. Individuality of the body as well

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as individuality of its several parts and organs may be considered in the abstract as well as in the concrete; just as in the case of individuation itself. When considered in the abstract, individuation of the body and similarly individuation of the parts and organs assume the form of a universal. Thus, for instance, it is most true that an individual body, individual bones, muscles, eyes, arms, etc., are common to all men. Consequently, the following universal Judgment is true: *Every man has his own body, his own bones, his own eyes, etc.* To put it otherwise, for the sake of contrast: It is true to say that *Every man has an individual body, etc.;* but it is false to say that *Every man has this individual body, etc.* Wherefore, *an individual body* is a universal concept; *this individual body* is a singular. So likewise, in all propriety of speech *thisness of body* is a universal; *this body* is a singular.

Prolegomenon V.

A word or two touching the respective concepts, *essence* and *nature*,—in addition to, as well as in confirmation of, that which has been stated in previous pages of this work,—will not be without profit. The ordinary distinction between the two is thus given by the Angelic Doctor. 'Because nature,' he says, 'designates the principiant of act, but essence is so called from *being*,' (*essentia, esse*); 'some things may be said to be of one nature, which agree together in some act,—such as all things that impart heat. But things cannot be said to be of one essence, save those that have unity of Being [1].' Taken in this sense, essence is the principle of being, and nature the principle of operation, corresponding respectively more or less with the first and second acts of all being. But nature is often identified with essence, as again St. Thomas tells us in a passage that it will be useful to quote. These are his words: 'Because that by which a thing is constituted in its own genus or species, is what we express by the definition that expresses what (*Quid*) the thing is; hence it is that the name of essence is changed by philosophers into the name of *quiddity*. . . . It is likewise called *Form*, accordingly as by Form is meant the perfection or certitude of any thing whatsoever. . . . It is also called under

[1] 'Quia natura designat principium actus, essentia vero ab essendo dicitur; possunt dici aliqua unius naturae, quae conveniunt in aliquo actu, sicut omnia calefacientia; sed unius essentiae dici non possunt nisi quorum est unum esse.' 1^ae xxxix, 2, 3^m.

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another name *naturè*, understanding the word *nature* according to the first of the four meanings assigned by Boetius in his Work *On the two Natures*, viz. as nature is understood to mean that which can be conceived in whatsoever way by the intellect; for a thing is only intelligible by virtue of its definition and essence. In this sense likewise the Philosopher says, in the fourth Book of his *Metaphysics*, that every substance is a nature. But the word, *nature*, taken in this way, seems to express the essence of a thing accordingly as it has order, or an ordering, to the proper operation of the thing; seeing that no entity is without its proper operation[1].' Hence, according to this interpretation of the word *nature*, there are four words which objectively are equivalent,—essence, quiddity, Form, nature. But the same object is called *essence*, forasmuch as it answers to Being: *quiddity*, forasmuch as it answers to the definition; *Form*, forasmuch as it answers to the perfection and fixity of Being; *nature*, forasmuch as it answers to the true concept of the intellect.

The four definitions,—more accurately, meanings,—alluded to by St. Thomas, which Boetius has given to the word, *nature*, are as follows: (i) In its most universal acceptation, 'Nature is predicated of those things which, since they exist, can in some way or other be conceived by the intellect.' (ii) In a more restricted sense, as applicable to integral entities, 'Nature is everything that can operate or make impressions.' This definition answers very nearly to the differential meaning *of* the term, by which it is distinguished from essence. But it includes qualitative accidents, since these are capable *instrumentally* of *operating and making impressions*. (iii) Yet further restricted to substances exclusively, 'Nature is the principiant of motion absolutely, not by accident.' (iv) From a more strictly metaphysical point of view, 'Nature is

[1] 'Et quia illud per quod res constituitur in proprio genere vel specie, est quod significamus per definitionem indicantem quid est res; inde est quod nomen essentiae a philosophis in nomen quidditatis mutatur. . . . Dicitur etiam forma, secundum quod per formam significatur perfectio vel certitudo uniuscujusque rei. . . . Hoc etiam alio nomine natura dicitur, accipiendo naturam secundum primum modum illorum quatuor modorum quos Boetius, de duabus Naturis, assignat, secundum scilicet quod natura dicitur esse illud quod quocumque modo intellectu capi potest; non enim res intelligibilis est nisi per suam definitionem et essentiam: et sic etiam dicit Philosophus in 4 Metaphys., quod omnis substantia est natura. Nomen autem naturae hoc modo sumptae videtur significare essentiam rei secundum quod habet ordinem vel ordinationem ad propriam operationem rei, cum nulla res propria destituatur operatione.' *Opusc.* XXX, (*aliter*, XXVI), *c°* 1.

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the specific difference that informs every single thing[1].' This last definition will prove of service in a subsequent Proposition.

From these passages three principal meanings of the word Nature, suitable to the present investigation, may be gathered. 1. Nature is identical with essence,—that is to say, it includes everything that has actual Being. 2. It is distinguished from essence, as expressing the principiant of natural operation. 3. It represents the specific difference of a metaphysical composite.

Once more: 'Essence,' adds St. Thomas, 'sometimes expresses that *by which a thing is*, such as is conveyed by the word, *humanity;* and sometimes *that which is*, such as is conveyed by the word, *man*[2].'

Declaration of the Proposition.

In order to enable the reader to acquire a clear cognition of a somewhat abstruse doctrine, it will be better to proceed by way of analysis, and to commence with objects that are patent to the senses,—corporeal substances. In this path the Angelic Doctor shall lead the way. 'In entities,' he writes, 'that are composed of matter and Form, there is necessarily a difference between the nature, or essence, and the supposit. For nature, or essence, comprehends within itself those things which enter into the definition of man; for by these man is man. And this it is which the term, *humanity*, conveys; viz. that by which man is man. But individual matter, with all the accidents that individuate it, does not enter into the specific definition. Thus, *this* flesh and *these* bones, or whiteness or blackness, or other things of a like nature, do not enter into the definition of man. Hence, *this* flesh, *these* bones, and the accidents that designate *this* matter, are not included in *humanity*. Nevertheless, they are included in that which is *man*. Hence, that which is *man* has in it something that *humanity* has not. Wherefore, *man* is not entirely the same as *humanity*; but *humanity* is conceived as the formal part of *man*, because the defining principiants,'—that is to say, the principiants which constitute the definition,—'exhibit the nature of a Form relatively to the individuating matter[3].' Let another similar passage be subjoined:

[1] *De Persona et duabus Naturis, c.* 1.

[2] 'Et sic patet quod essentia quandoque dicit *quo* est, ut significatur nomine *humanitatis*; et quandoque *quod* est, ut significatur hoc nomine *homo*.' 1 *d.* xxiii, *a* 1, *c., p. m.* Cf. *Quol. L.* II, *a.* 4, *c.*

[3] 'Sciendum est quod, in rebus compositis ex materia et forma, necesse est quod

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'Out of the union of soul and body is constituted both *man* and *humanity*. These two differ as follows. *Humanity* is conceived after the manner of a part; since that is said to be *humanity*, by which *man* is man. Thus it exclusively represents the essential principiants of a species, by which this individual is collocated under such a species. Wherefore, it assumes the character of a part; since many other things besides such principiants' (to wit, the genus and difference) 'are to be found in the things of nature. But *man* is conceived after the manner of a whole. For *man* means one having humanity, or subsisting in humanity, without prescinding from any whatsoever elements that are over and above the essential principiants of species; since by my saying, *having humanity*, is not excluded one who has colour, and quantity, and other like things[1].'

Let us, then, adopt the illustration of St. Thomas, and pursue the analysis with the help of those hints which he has given us. For the concept, *man*, there are two elements that are both common to each and all who are included under the concept, yet after a very different manner. There is something *which*, and something *by which*,—a person, and a nature,—some one who receives a specific essence, and the specific Being which such a one receives; for man is a person, and such person is man by virtue of his humanity. Humanity, then,—or to express it by its definition, *rational*

differant natura vel essentia et suppositum; quia essentia vel natura comprehendit in se illa tantum quae cadunt in definitione speciei; sicut humanitas comprehendit in se ea quae cadunt in definitione hominis; his enim homo est homo: et hoc significat humanitas, hoc scilicet quo homo est homo. Sed materia individualis cum accidentibus omnibus individuantibus ipsam non cadit in definitione speciei; non enim cadunt in definitionem hominis hae carnes et haec ossa, aut albedo vel nigredo, vel aliqua hujusmodi. Unde hae carnes et haec ossa, et accidentia designantia hanc materiam non concluduntur in humanitate; et tamen in eo quod est homo, includuntur. Unde id quod est homo habet in se aliquid quod non habet humanitas; et propter hoc non est totaliter idem *homo*, et *humanitas*; sed humanitas significatur ut pars formalis hominis; quia principia definientia habent se formaliter respectu materiae individuantis.' 1ae iii, 3, *c.*

[1] 'Ex unione animae et corporis constituitur et homo et humanitas: quae quidem duo hoc modo differunt; quod humanitas significatur per modum partis, eo quod humanitas dicitur qua homo est homo, et sic praecise significat essentialia principia speciei, per quae hoc individuum in tali specie collocatur. Unde se habet per modum partis, cum praeter hujusmodi principia multa alia in rebus naturae inveniantur. Sed homo significatur per modum totius; homo enim dicitur habens humanitatem, vel subsistens in humanitate, sine praecisione quorumcumque aliorum supervenientium essentialibus principiis speciei: quia per hoc quod dico, Habens humanitatem, non praeciditur, Qui habet colorem, et quantitatem, et alia hujusmodi. *Quol. L.* IX, *a.* 2, 1m.

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animality,—is the nature, or something *by which;* for every man is a person, and every such person is a man by virtue of his rational animality. This nature is specifically the same in all men. But in the concept, *man*, there is,—as we have seen,—another element included; for *man* expresses an entity having rational animality, and an entity having rational animality is equivalent to *a person who is human*. Therefore, *personality* is included in the idea of *man* as well as *humanity*. Now, personality supposes individuation, because it essentially denotes incommunicability to another and the separation of one from the other within the limits of the same species and beyond. But, if it represents individuation; how can that other assertion, made at the outset, be true, viz. that it is common to each and all who are included under the concept? The answer to the difficulty is, that each man and all men have a *thisness*, and each man has *this thisness* by which he is distinguished from his neighbour. All men have individuation; but the individuation of each is proper to himself and cannot be communicated to another. All men have certain individual notes by which they are mutually distinguished; but the individual notes of Peter are not the individual notes of Paul. (See Prolegomenon iv.). In *man*, then, it is plain that there are two elements,—the specific nature and a person.

Now, there are certain points of difference in these two elements, which are worthy of note. First of all, in the specific nature *body* is only implicitly included in the idea of *animality*, of which *body* is a remote genus, as may be seen in the Porphyrian tree; whereas in the *person* of man are expressly included *thisness* of matter, *thisness* of quantity, *thisness* of qualities, *thisness* of parts and organs, —though not *this* thisness,—after the manner already explained. Hence, in the second place, the abstract essence is universal, necessary, immutable; for, apart from a Subject,—that is to say, from actual existence in the concrete,—it is simply a Divine Prototypal Idea; whereas the concept of *person*, or *supposit*, supposes (at least, ideally) individuation and implicitly includes those individual notes which are contingent and accidental. Further: It is most important to remark, on account of its intimate relation to the present Proposition, that the concepts of *supposit*, *person*, *individual*, are more general, because more indefinite, than *humanity* or any other specific nature. For *supposit* belongs to all complete substances; *person*, to all complete intellectual substances; and *individual* to all actual being. The concept of a *specific nature*,—as rational ani-

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mality, for instance,—is, on the other hand, more restricted and definite. It, as it were, actuates and specifically determines the former. Hence, *supposit, person, individual*, exhibit more of the nature of matter as known to us in physical composition; while the *specific nature* assumes the character of a determining Form. Once more: Objectively the specific nature in itself is a universal, as all Forms are, according to the teaching of the Angelic Doctor: whereas in the supposit it receives individuation, as physical Forms in the matter. It is true that the individuation in the former case is conceptual and, therefore, takes the form of a universal, as we have already seen; otherwise, it would not belong to Metaphysics. Nevertheless, the individuation is essentially real. Hence, the following Judgment is unconditionally true: Every rational animal is *a* man; not man only, though it is likewise true that every rational animal is man. The former Judgment, however, is philosophically more correct; and it would be instinctively adopted in ordinary speech by most persons. But why is this, if not because in the idea of man is included a *thisness*, or individuation, which the term, *a* man, denotes; though such individuation,—like the article that expresses it,—is indefinite?

Wherefore, in sum: Supposit and the determining specific nature together constitute a metaphysical composite. Whether *this* supposit as terminating *this* specific nature can be truly considered to be a physical composition, will be better determined when the nature of the former shall be examined *ex professo*. Meanwhile, one word of caution. Care must be taken, in thus conceptually separating supposit or person from the specific nature, not to fall into the error of supposing that the former can really be separated from the latter; although it is possible *de potentia absoluta* that the nature should be without its own proper supposit, or personality.

From the above analysis it may be clearly understood why the specific nature is considered as a metaphysical Form. Nothing can be plainer than the fact that it is not a physical Form; since it is an abstract generalization. On the other hand, it is equally plain that it cannot be a merely logical Form; since the foundation for conceiving it is eminently real. Therefore, it is metaphysical; that is to say, the concept of it is logical in the mode of representation, but is nevertheless representative of a real object. Secondly, it has been made manifest why it can be justly regarded as a Form. It is a transcript of the Exemplar Form in the Divine Intelligence,

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and possesses all the nobility, determinations, actuosity, of a true Form. Moreover, by it every creature has its definite grade in the hierarchy of being. Lastly, it is the essential source of natural operation.

COROLLARY.

Though the metaphysical Form is primarily predicable of substance; yet it is not to be altogether excluded from accident. It must be admitted that there is a special difficulty; because accident is essentially dependent upon substance in which it naturally inheres. Nevertheless, it has an entity of its own, an essential nature; consequently, though it receives its individuation from its substantial Subject, still it retains its own proper individuation. Of course, it neither is nor can be so terminated as to become an adequate supposit; for this would be in contradiction to its nature.

PROPOSITION CCXXI.

The metaphysical Form, as constituting an essence, is the specific difference.

PROLEGOMENON I.

The Form of an essence, as such, must necessarily be metaphysical. The adjective has been prefixed to Form in the Enunciation, simply for the purpose of preserving the external harmony of the Proposition with the heading of the Article. For the difference between a metaphysical and physical essence,—or, to put it more accurately, between an essence physically and metaphysically regarded,—the reader is referred to the third Prolegomenon in the preceding Thesis. Since Metaphysics contemplates the universe of reality as a united whole, its concepts are the result of a wider comparison than those of physics; first, because its sphere of truth is immeasurably wider, and then, because unity is the highest excellence of science, —the more so, as it approaches nearer to that foremost among the three transcendental attributes of Being. It results from such comparison, that Metaphysics is ever reaching higher and higher universals,—that is to say, higher and higher unities,—till it is arrested by a Transcendental that is all inclusive. Neither are these universals, as it is hardly necessary to say, a mere creation of thought, though logical in their Form; since they are founded upon that exceptionless and intimate intertwining of finite beings with

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one another, by which they so plainly manifest their production from Unity. Similarly, in examining into the essential constitution of a specific nature, Metaphysics looks out for a similarity and a distinction;—a similarity with such essences as are nearest to it in grade of being, and a distinction by which it is essentially itself and not another. The former is common and, as a consequence, indeterminate; the latter is special and differentiating. Hence, in order to arrive at the scientific concept or true definition of its object, metaphysics resolves the given essence into two of its causes,—the material and formal, i.e. speaking logically, into its proximate genus and specific difference. The former represents that which is common to the essence, *hic et nunc* under consideration, and to other cognate essences and is, therefore, undifferential; the latter represents that which is special to the same essence and, therefore, differentiating.

Prolegomenon II.

As will be seen in the subsequent Declaration, Suarez maintains an opinion touching the subject of the present Thesis, which seems to require the introduction of a *Lemma* from logic and ideology. Though the metaphysical division of an essence into its material and formal parts corresponds *in its results* with the logical division of a species into its genus and specific difference, and in consequence metaphysical and logical definition will be so far practically identical; yet there is a vital distinction between the two, corresponding with the different nature of the logical and metaphysical wholes. As the logical whole is the whole of extension, its division is *objectively* synthetical. We divide a logical whole by adding and determining. On the other hand, as the metaphysical whole is the whole of comprehension, its division is analytical. We divide by subtracting and resolving the determinate. Hence, in order to arrive at a logical definition, we run down the genera, adding and adding by means of fresh differences,—determining more and more that which was indeterminate,—till we arrive at the division and definition required, and thus in the final definition many others are virtually contained. But in order to arrive at a metaphysical definition, the essence, or specific nature is analyzed by metaphysical division into its material and formal parts; and the synthesis of these constitutes the metaphysical definition. Wherefore, such definition can be one only.

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Declaration of the Proposition.

From the concluding sentences of the first Prolegomenon it may be seen that, in a specific nature metaphysically regarded, there are two parts, one of which is indeterminate, indifferent, receptive; the other determinate, differentiating, actuose. The former is represented by what logicians call the proximate genus; the latter, by the specific difference. Thus, to resume the instance of St. Thomas, *humanity* is a specific nature. If subjected to metaphysical analysis, it is seen to consist of two elements,—*animality* and *rationality*. *Animality* is that which is common to it with other specific natures, and forms that bond of union which has been signalized in the first Prolegomenon. It is indeterminate; for it is neither man nor beast, though potentially inclusive of both. Of itself it is indifferent whether it be the one or the other, because it is equally receptive of both. On the other hand, *rationality* is determinate, differentiating, actuating; because, as informing (so to say) animality, it determines and actuates the latter to one specific nature, and in consequence differentiates it,—that is to say, distinguishes the specific nature so constituted from every other. Thus, then, *animality* may be justly regarded as the matter, and *rationality* as the Form, of *humanity*. Hence it is, that the two are respectively called in metaphysical phraseology the *material* and *formal* part of the specific nature.

There are three striking points of similarity between the proximate genus and the specific difference (as logicians call them) on the one hand, and matter with its substantial Form on the other. For, as matter is indifferent to all Forms of itself, yet is so determined by the actuation of one Form that, while preserving its absolute potentiality to other Forms, it admits the simultaneous presence of no rival Form; so the genus is of itself indifferent to any whatsoever difference, yet is actually so determined by the added difference that, while preserving its potentiality to other differences, it will admit the simultaneous presence of no rival difference. Thus, *animal* is of itself indifferent whether to be *rational* or *irrational*; but once determined to be *rational*, in the composite so determined it can no longer be *irrational*. Suarez, however, seems to maintain a contrary opinion; for he asserts that there may be a multiplication of Forms in the same metaphysical composite, because there are many genera and many differences included in the same species, as may be seen in the Por-

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phyrian tree. He adds, by way of confirmation, that there can be more than one definition; although a definition is supposed to represent the entire essence of the entity defined. But the answer is plain. Suarez is confounding the metaphysical with the logical whole in his first argument. The metaphysical whole is the ultimate species, which is composed,—to preserve the logical terminology,—of the proximate genus and the specific difference. But in one and the same line of abstraction there is not more than one proximate genus or more than one specific difference. Each specific nature consists of but one material part and of but one formal part. A somewhat similar reply must be made to the confirmatory argument. Definitions of one and the same object may be multiplied, either because they are incomplete, (and this is the sort of multiplication which Aristotle contemplates in the passage from the *De Anima* cited by Suarez); or because essential, physical, accidental, definitions of the same object are mutually distinct, (and such is the multiplication which Aristotle refers to in the three passages from the *Posterior Analytics*, quoted by the same authority). But there can be only one adequate metaphysical definition of a specific nature; just as the nature itself is one only.

There is a second striking resemblance between the proximate genus and specific difference,—or the material and formal part of an essence,—on the one hand, and matter and its substantial Form on the other; viz. that neither of the two elements in each order can exist independently of the other. In the physical order matter, as we have seen, cannot exist without Form, or Form without matter; in the metaphysical order the material part cannot exist without the formal, or the formal without the material. Thus, in man animality must be rational, and rationality must be animal. Neither is it possible for animality to *be*, unless informed by rationality or irrationality.

There is a third observable resemblance. In material substance no necessity exists for any distinct act of union between matter and the Form, because union enters into the essential nature of the Form; in like manner, there is no necessity for a metaphysical union between the material and formal parts of an essence, because the latter is essentially the metaphysical act of the former. A *rational animality* is identical with an *animality as rationalized.* It is hardly necessary to add, that Suarez,—consistently with that independence of entity which he erroneously, as is here maintained, attributes both

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to matter and Form in the physical order,—denies the truth of this last parallel; so that, while admitting the statement in regard of the metaphysical, he rejects it when applied to the physical, constituents; whether with sufficient justice, it is for the reader to determine.

PROPOSITION CCXXII.

Though the metaphysical composition of the essential nature with its supposit approaches more nearly to a real composition than that which is constituted by the union of the material with the formal part in a specific nature; yet the specific difference approaches more nearly to the true nature of a Form than the integral essence.

I. The first Member of this Proposition, wherein it is asserted that *the metaphysical composition of an essential nature with its supposit approaches more nearly to a real composition than the combination of the material with the formal part in a specific nature*, is thus declared.

It is to be observed that this Member virtually contains two propositions, since it is implied that in neither case is the composition real. This first proposition is easy of proof. For universals and abstract concepts, as such, are incapable of existence. Therefore, *as such*, they are not real. But all metaphysical composites are universals and abstract concepts. Therefore, formally they are not real, nor is their composition real. Nevertheless, they are founded in reality; for thus it is that they are distinguished from merely logical concepts. It follows as a consequence, that the second and explicit proposition which is made in this Member depends upon the nature of the reality which is the foundation of these two metaphysical compositions respectively. Wherefore, the metaphysical distinction between a specific nature and the supposit is founded upon a real minor distinction between the two in the concrete; whereas the metaphysical distinction between the material and formal part of a specific nature is not founded upon any real distinction either major or minor. The *Antecedent* is thus declared. We know from Supernatural Theology that it is possible for a substantial nature to exist without its proper personality; and, moreover, there is no intrinsic repugnance. But no real distinction is possible between the proximate genus and specific difference of an individual entity. Genera cannot exist save in their species. No one has seen, or ever will see, an animal that is neither rational nor brute. Hence, the two concepts bear the

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relation to each other of the determinate to the indeterminate. Nevertheless, even here there is remotely a real ground of distinction. For, though a rational entity, (using the term, *rational*, according to its *specific* meaning), is,—by implication, at least,—necessarily animal; yet animality does not necessarily include rationality, seeing that *de facto* there are many animals which are not rational. Therefore, though when united in the same physical composite, the two are really inseparable; yet in diverse physical entities one really exists without the other.

II. The second Member, in which it is asserted that *the specific difference approaches more nearly to the true nature of a Form than the integral essence*, is thus declared. The integral essence does not exhibit any real characteristic of a Form relatively to the supposit with which it is metaphysically composed. For really the supposit is itself an act modally determining the substance; since all, even substantial, modes so far share in the nature of an accident that they depend upon, and perfect, substance. In the present instance, substance of itself possesses this essential perfection, that it can stand alone and neither postulates nor admits a Subject of inhesion. This it has *as* substance. But supposit adds this ulterior and complemental perfection, that substance is thereby made incommunicable as a nature to any other supposit or person. Hence,—if anything,—substance, or the specific nature, assumes the nature of a Subject relatively to its mode, rather than the supposit relatively to its substance. Again: Supposit is no part of the essential nature, but a supplemental perfection; therefore, if Subject at all, it would assume the nature of an accidental Subject. But such composition is not metaphysical. Once more: The supposit depends for its origin and existence upon, and therefore presupposes, the specific nature; but so considered, the nature exhibits more of the characteristics of a material than of a formal cause. On the other hand, the specific difference has the characteristics of a true Form, as has been shown.

PROPOSITION CCXXIII.

The metaphysical Form, understood in either of these ways, exercises no formal causality.

Declaration of the Proposition.

From the explanation given under the second Member of the previous Thesis it will be obvious, that the specific nature does not

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exercise any formal causality in the supposit; since its causality would, if anything, be material. So, again, the specific difference exercises no formal causality in the proximate genus; although there is more semblance of formal causality in this than in the former instance. The reason why there can be no formal causality, speaking even metaphysically, is this; that *in the species* the proximate genus and specific difference are objectively identical, and formal causality postulates a real distinction between the Subject and the Form. To resume the old instance:—In *humanity* rationality is really identified with animality; the only difference being, that the latter is an indeterminate, the former a determinate, concept, but both of the same object.

ARTICLE IX.

Accidental Forms.

The causality of the accidental Form so closely resembles that of the substantial Form, that the detailed examination already instituted of the latter will spare the necessity of a like prolixity touching the former. The division of the subject-matter will be nearly the same. Consequently, the present Article will be divided into five brief Sections, as follows:—

1. The real formal causality of accidents.
2. The nature of such causality.
3. The effects.
4. The eduction of accidental Forms out of the potentiality of their Subject.
5. The causality of modes.

§ 1.

The real formal causality of accidents.

PROPOSITION CCXXIV.

Accidents which have a true entity of their own distinct from that of their substantial Subject and intrinsically determine the latter, exercise a true formal causality.

Prolegomenon I.

So far as the present discussion is concerned, accidents may be conveniently divided into two classes, viz. those which intrinsically determine, either immediately or mediately, their substantial Sub-

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ject, and those on the other hand which only extrinsically affect their Subject by a sort of reference and consequent denomination. We may assume, as an instance of the latter class, *clothes*. These are said to be an accident of their wearer, because they are referred to him in a special way; as they are his, and by reason of them he is said to be clothed. Suarez subdivides the former; but the subdivision necessarily introduces questions touching individual Categories and their respective subordinate species, about which there may be a difference of opinion. It will, therefore, be better to wait till these Categories are treated *ex professo*.

One thing it is necessary to add by way of caution. That which relatively to another is an accident, in itself may be a substance; as in the instance given. *Clothes*, as woollen or linen textures, are substances; relatively to him who wears them they are accidents.

Prolegomenon II.

The term, causality, like that of Being, is analogously applied to accident. For, as accident is not simply *Being*, but *Being of Being;* so the formal causality of accident is not univocal with the formal causality of the substantial Form. The former presupposes its Subject already fully constituted in its essential nature; the substantial Form is congenital with its Subject. Wherefore, accident has no causal connection with the absolute existence of its Subject, though it does causally affect the existence of its Subject as *such* or *such*. Thus, for instance, *whiteness* presupposes the constitution of the integral substance of the *rose*, while causally affecting its existence as a *white rose*. It hence follows that the causality of an accidental Form does not result in the absolute oneness of the resultant composite, but only in an adventitious oneness. Lastly: The formal causality of an accidental Form is inferior after a sort to the material causality of its substantial Subject. It gets more than it gives. On the contrary, the causality of a substantial Form is in all respects of a nobler order than that of matter.

Declaration of the Proposition.

Wherever there is a real potentiality on the part of the Subject and a real actuation on the part of the supervenient Form, there must necessarily be a true formal causality. But in the accidental composites included under the present Thesis there existed, prior to actuation, a real potentiality on the part of the substantial Subject

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and subsequently a real actuation on the advent of the accidental Form. Therefore, etc. The *Major* is evident; for it rests upon the definition of a formal cause. The *Minor* is thus declared. The substance, which is the destined Subject of the accident, prior to its information is without such accident; yet it is capable of receiving it, otherwise it never could have it. Therefore, the substantial Subject is in potentiality to such accident, of its own nature. On the other hand, the said accident, according to the hypothesis, is a reality with an essence of its own; and when it informs the substance, the latter is that *actually* of which previously it was only capable. It has received an additional reality which it did not possess before. Thus, in the instance already adduced, the *rose* in its own essential nature is neither white nor red nor of whatsoever other definite colour, but is capable of any colour. It becomes determined to *white*, and thereby receives a perfection extraneous to its own integral nature. These accidents are intrinsic causes of their own proper effects. Since, then, their causality is intrinsic, they must be either material or formal causes. But they are evidently not material. Therefore, they are formal.

Such is the teaching of the Angelic Doctor. 'Since all accidents,' he writes, 'are certain Forms superadded to substance and caused' efficiently 'by the principiants of substance; their being must be superadded to the being of substance, and dependent upon it[1].' So again: 'The Subject is compared with accident, as potentiality with act; for the Subject is to a certain extent in act by reason of the accident[2].' Lastly: St. Thomas adds more explicitly: 'A Subject is compared with accident in three ways; first as affording it support, for accident has no subsistence of its own but is sustained by the Subject. Secondly, as potentiality to act; for the Subject is subjected to accident as a sort of potentiality to its act. Hence, also, accident is called a Form. Thirdly, as cause to effect; for the principiants of the Subject are principiants absolutely of the accident[3].' This third characteristic does not concern us for the present.

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[1] 'Quia enim omnia accidentia sunt formae quaedam substantiae superadditae et a principiis substantiae causatae, oportet quod eorum esse sit superadditum supra esse substantiae et ab ipso dependens.' *Cg. L. IV, c°* 14. *p. m.*

[2] 'Subjectum comparatur ad accidens sicut potentia ad actum; subjectum enim secundum accidens est aliquo modo in actu.' 1ª° iii, 6, *c.*

[3] 'Subjectum tripliciter comparatur ad accidens. Uno modo sicut praebens ei sus-

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PROPOSITION CCXXV.

Accidents which only denominate their Subject extrinsically do not exercise a true formal causality.

Prolegomenon.

In order that the Declaration of this Proposition may be made more intelligible to the reader, it will be necessary to forestall in some measure the doctrine touching the Categories, which will occupy us in the seventh and eighth Books; nor can this be done more safely than in the words of the Angelic Doctor. 'Because the Categories,' he writes, 'are arrangements of predicables, . . they are therefore recognized by their being predicated, or by their denominating. Now, something may be predicated denominatively of another, or denominate it, in two ways. First, in such wise as that such predication or denomination is the result of something that is intrinsic in the entity about which predication or denomination is made,—that is to say, something that perfects it either by identity or by inherence. This latter, again, takes place in two ways. One wise, in that such denomination is made absolutely and in itself; and in such way the three absolute Categories,—viz. Substance, Quantity, and Quality,—denominate. Wherefore, we say, *Socrates* is a substance by identity, or that he is of such size and of such sort by inherence. Otherwise; in that such denomination is from what is intrinsic, connoting, nevertheless, something extrinsic as a term to which that which is denominated stands in a certain relation. This is the way in which Relation denominates; as, for instance, when it is said that *Socrates* is equal to, or like, *Plato*. In another way denomination is made from that which is extrinsic,—that is to say, from something which is not in the formal object of denomination,—but there is something absolute that is extrinsic, from which the denomination arises; as, for instance, when we say that *Socrates* is an agent, such denomination arises from the passing Form itself which is received in the Subject of the action. For the *heat* that is caused in the Subject that receives it, in order to denominate a thing as *hot*, (which is an intrinsic

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tentamentum; nam accidens per se non subsistit, fulcitur vero per subjectum. Alio modo sicut potentia ad actum; nam subjectum accidenti subjicitur, sicut quaedam potentia actui; unde et accidens forma dicitur. Tertio modo sicut causa ad effectum; nam principia subjecti sunt principia per se accidentis.' *Virt: a.* 3, *c.*

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denomination), requires nothing else, in order to be so denominated by it, save a Subject of inhesion. But, in order that it may receive some such denomination as, for instance, *imparting heat*, something else besides the Subject is necessarily required,—to wit, a *cause effective of heat;* since the Subject in which such *heating* is received requires it. The case is similar with Place, which is a sort of surface. For a surface, in order to denominate that of which it is the surface, requires nothing else but a Subject of inhesion,—that is to say, a body containing it; but in order that something may be denominated after the manner that Place denominates the placed, it requires something else besides the Subject of the surface. The last six Categories denominate in this way. And such' (Categories) 'as so denominate by an extrinsic denomination convey another reality beyond the entity denominated, which the other Categories that denominate intrinsically do not convey; although the entities themselves from which such denomination is received are the same. Such diversity suffices for distinguishing the Categories. In this way these six Categories are distinguished from the first four; that is to say, by the extrinsic entities which they denominate, and which the other four do not. Now, it must be understood that an extrinsic denomination postulates some sort of essential relation between the extrinsic entity that denominates and that which receives denomination from it. For it is necessary that essentially and from the condition of entities such a mode of denomination should accompany things. Wherefore, it is necessary that the reality from which such denomination arises should be the foundation of some essential relation. And seeing that the relation between entities is not of itself the foundation of the relation, (otherwise, it would go on for ever); consequently, the denomination is not made from the relation. For to have something produced by a thing itself, (which belongs to action), denotes a certain relation; and to have a position in space; and so of other Categories. These Categories, however, do not express these relations; because such relations belong to the Category of Relation. But the aforesaid Categories only express something absolute, as denominating extrinsecally. For heating, which is in action, expresses heat which is an absolute Form and denominates an efficient cause, viz. something imparting heat; and so of the rest[1].'

[1] 'Notandum, quod quia praedicamenta sunt ordinationes praedicabilium, . . . ideo

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The above passage will possibly prove obscure to some of our readers. Wherefore, a synopsis shall be given, in which the more difficult parts will meet with an explanation.

i. The Categories are a classification of predicables or of attributes (in the most generic sense of the term) by which the Subject may be denominated. These predicables are realities. So much will suffice for the present. The first four of these Categories denominate from something intrinsic in the Subject denominated. This something is either absolute or relative. Now, the names of the first

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per praedicari seu denominare cognoscuntur. Dupliciter autem potest aliquid de alio praedicari denominative, sive illud denominare. Uno modo quod talis praedicatio seu denominatio fiat ab aliquo quod sit intrinsecum ei de quo fit talis praedicatio seu denominatio, quod videlicet ipsum perficiat sive per identitatem sive per inhaerentiam. Et hoc adhuc contingit dupliciter. Uno modo, quod talis denominatio fiat absolute et in se; et sic denominant tria praedicamenta absoluta, scilicet substantia, quantitas, et qualitas. Unde dicimus, Socrates est substantia per identitatem, vel est quantus et qualis per inhaerentiam. Alio modo, quod talis denominatio sit ab intrinseco, importando tamen aliquid extrinsecum ut terminum, ad quem se habet illud quod denominatur. Et isto modo denominat relatio; ut cum dicimus, Socrates est aequalis vel similis Platoni. Secundo modo fit denominatio ab extrinseco, scilicet ab eo quod non est in denominato formali, sed est aliquod absolutum extrinsecum a quo fit talis denominatio: ut cum dicitur, Socrates est agens, talis denominatio est ab ipsa forma fluente quae in passo acquiritur. Calor namque causatus in passo, ad hoc quod denominet aliquid calidum, quae denominatio est intrinseca, nihil aliud requirit ut sic denominetur per ipsum, nisi subjectum in quo est. Sed ad hoc ut denominetur tale aliquid, puta calefaciens, de necessitate requirit aliam rem a subjecto, scilicet causam effectivam caloris, quia requirit passum in quo est talis calefactio. Similiter est etiam de loco qui est superficies quaedam. Superficies enim, ad hoc ut denominet illud cujus est superficies, non requirit nisi subjectum in quo est, scilicet corpus continens; sed ad hoc ut denominet aliquid sicut locus locatum, requirit aliud a subjecto superficiei. Et isto modo denominant illa sex praedicamenta. Et talia sic denominantia denominatione extrinseca important aliam realitatem quam rem denominatam, quam non important alia praedicamenta quae intrinsece denominant, licet ipsae res a quibus accipitur talis denominatio, sint eaedem; et talis diversitas sufficit ad distinguendum praedicamenta. Et isto modo ista sex praedicamenta a primis quatuor distinguuntur, scilicet per res extrinsecas quas denominant, quod non faciunt illa quatuor. Sciendum est autem, quod denominatio ab extrinseco requirit aliquem per se respectum inter extrinsecum denominans et denominatum ab eo; quia oportet quod per se et ex conditione rerum talis modus denominandi consequatur res. Et ideo oportet quod illud a quo fit talis denominatio, sit fundamentum per se alicujus habitudinis. Et quia habitudo rerum non est per se fundamentum habitudinis, alioquin iretur in infinitum; ideo talis denominatio non fit a respectu. Habere enim aliquid a se productum, quod pertinet ad actionem, dicit quemdam respectum, et habere locum, et sic de aliis. Ista tamen praedicamenta non dicunt hos respectus, quia iste respectus pertinet ad genus relationis; sed praedicta praedicamenta solum dicunt absolutum, ut denominans extrinsece; calefactio enim, quae est actio, dicit calorem qui est forma absoluta, et denominat causam efficientem, scilicet calefacientem; et sic de aliis.' *Opusc. XLVIII, (aliter XLIV), Caput unicum de sex praedicamentis, post Tractat.* v^m.

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four Categories are, Substance, Quantity, Quality, Relation. In the first three of these the foundation of denomination is something absolute; in Relation, as the name suggests, it is relative. This something intrinsic is cause of the absolute denomination of the Subject of predication, (which is a *first substance*), either by reason of identity,—as in the Category of Substance,—or by reason of inherence,—as in the Categories of Quantity and Quality. Thus,—to adopt the example of the Angelic Doctor,—that *Socrates is a substance*, is predicated of him by identity; that *Socrates is six feet in height*, or that *he is red-haired*, is predicated of him by inherence. All three are absolute;—that is to say, they connote nothing outside of Socrates. That *Socrates is a father*, is relative; because it connotes something extrinsic to Socrates, viz. a son. But the foundation of such relation is something intrinsic in Socrates, as will be seen in its place. The preceding Thesis principally refers to Quantity and Quality; as there are special difficulties connected with Relation, which are reserved.

ii. The last six Categories denominate from something extrinsic to the Subject denominated. Thus, *imparting heat* is in the Category of action. Let us analyze the idea with St. Thomas. The heat imparted is an accidental Form inherent in *the bar of iron*, —for instance,—which is the Subject of the action. As heat simply in the bar of iron, it is a quality absolutely inhering in the bar, and nothing else. But, when *imparting* is predicated of *heat*, it denominates an extrinsic efficient cause from which the heat has proceeded. Similarly, when the Subject is considered as subject to the *imparting* of the heat, it falls under the Category of Reception (*Passio*), and as such postulates an efficient cause; for action and reception connote each other. In other words, when it is predicated of *the bar of iron* that it has received heat, the predication is in the Category of Reception and therefore postulates the action of some efficient cause.

The names of these six Categories are, Action, Passion or Reception, Place, Time, Position, Property or Possession.

iii. The entity that is subject of extrinsic denomination remains the same in its own entity as it was before. Thus, the Form of *heat* is the same, whether it is considered as that by which the bar of iron is hot, or as imparting heat to the bar of iron. Hence, whether this denomination of action expresses the relation of the efficient cause to its effect, (as some say), or simply denotes the

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fire as communicating heat, (as others say); it equally remains, that the qualitative Form of heat remains entitatively the same, but receives a peculiar denomination because communicated by the action of the efficient cause.

iv. Hence arises a difficulty. According to this explanation, the whole real difference between *inherent heat* and *imparting heat*,—between *hot* and *heating*,—would seem to consist in this; that the former is absolute, the latter relative. For *inherent heat* is an absolute quality informing its Subject; while *heating heat* receives such designation from the relation of the qualitative Form to the efficiency, say, of fire. Thus, the Category of Action would be identified *ex parte rei* with the Category of Relation. St. Thomas replies. The objection would hold good, if action formally denoted the relation itself; but such is not the formal content of its predication. Action is predicated of the informing heat,—to resume the example already given,—*as* communicated to the bar of iron by an efficient cause, and consequently as an *effect* in such bar. Therefore, *heating* represents the inherent Form of heat, *plus* an extrinsic denomination derived from the efficient cause. The relation follows as a consequence; and is properly reducible under the Category of Relation.

v. If, however, we accept this explanation, there remains a still more formidable difficulty. Aristotle, the author of the Categories, asserts,—and the assertion has been defended by the Doctors of the School and, indeed, by all who teach the Peripatetic philosophy,—that the Categories are a real, not a merely logical division[1]. But, if it be true that action adds nothing to the Subject of predication, —that is to say, in the instance, given, to the Form of heat,—but an extrinsic denomination, while the entity of the subject in itself remains the same; it seems as though the Category of Action were a purely logical universal, and the rest of the six Categories would be obnoxious to the same criticism. Yet, on closer examination, it will be found that the objection cannot stand. For the communication of heat—that is to say, the heat as communicated, —includes a reality in the concept quite distinct from the concept

[1] For instance, Sanderson in his valuable Logic, speaking of the Categories, has the following: 'In aliqua istarum classium quicquid uspiam rerum est collocatur; modo sit unum quid, reale, completum, limitataeque ac finitae naturae. Exulant ergo his sedibus Intentiones secundae, Privationes et Ficta, quia non sunt realia,' etc. *Compendium Logicae Artis, L. I, c. 8, par. 2.*

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of the simple Form of heat as inherent in its Subject. It connotes a causal dependence on an agent, which is the action. Wherefore, though the entity of the Form is in no wise even modified by the extrinsic denomination; yet the causal dependence is a reality, although extrinsic to the constituted nature of the Form as it is in itself. Consequently, there is a real accidental difference between the immanent information of a qualitative Form and its transient communication; and this suffices to constitute a real difference between the two Categories.

vi. As the qualitative Form in the instance given, by virtue of an extrinsic denomination, enters within the sphere of another Category; so does the Subject of the Form likewise. As absolutely informed by the Form it is Substance; considered in relation to the efficient cause, it falls under the Category of Passion, forasmuch as it receives the action. Hence, the two Categories of Action and Passion stand in transcendental relation to each other. This observation will throw light on a clause which occurs towards the middle of the citation from St. Thomas, and is very difficult to understand. The author would suggest with great diffidence the following emendation of the text. 'Calefaciens de necessitate requirit aliam rem a subjecto, scilicet causam effectivam caloris, quia (aliter, *quam*) requirit passum in quo est talis calefactio.'

Declaration of the Proposition.

From the exposition already given in the Prolegomenon the truth of the Enunciation is made sufficiently apparent. All formal causality is from its nature inherent in the composite which it constitutes. No accident, therefore, which is extrinsic to the entity of its Subject can exercise any real formal causality. Again: Every Form, if truly causal, confers a new entity of some kind on its Subject; forasmuch as it determines the latter either to a specific nature or to an accidental perfection. But these extrinsic accidents, (if one may call them so), can boast of no such result; since the Subject, as we have seen, remains in its entity precisely the same with or without such accidental attribution. Once more: Formal causality connotes material causality; for the two are transcendentally related. But in the instance of these accidents, included under the last six Categories, there is no such material cause. It would be absurd, for instance, even to imagine a man as a material cause of his clothes or of his house and park. Lastly:

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Wherever there is true formal causality, there must be physical conjunction between the Form and its Subject. But there is no physical union between the extrinsic entity denominating and the Subject denominated. Therefore, etc. Thus,—to repeat once more the instance of St. Thomas,—there is no physical conjunction between the furnace which denominates the Form of heat as heating the bar of iron and the Form of heat as afterwards informing the iron; and his *park* is not physically one with either the body or soul of the *squire*.

§ 2.

The nature of the formal causality of an accident.

PROPOSITION CCXXVI.

In accidents which exercise a real causality, the formal and proximate principiant of causality is the entity itself of such accidental Form, as exhibiting an essential disposition for informing its Subject.

Declaration of the Proposition.

The reasons which evince the truth of the above Enunciation will be understood without any difficulty, since they are precisely of a similar nature to those which have been given in proof of a similar Proposition touching the substantial Form. The formal and proximate principiant of formal causality in an accident, is the accident itself; because its disposition to inform its Subject belongs to its essential nature. It is educed from substance as its source; and it naturally depends upon substance for its actual existence and preservation. Further: Its generation is in substance; so that it needs no intervening mode of union, since in the natural order it is united to its Subject as a necessary condition of its existence. Neither is this tendency or disposition of accident to inhere in its Subject anything really distinct from its essential nature. For, first of all, such tendency is the essential difference which distinguishes accident from Substance; consequently, it is *de potentia absoluta* inseparable from accident. Then, again, if we suppose, for the sake of argument, that this disposition is really distinct from the essential nature of accident; it must itself be an accident. Thus, the question returns touching *its* proximate principiant of formal causality. Either, then, we must admit an infinite process, which is absurd; or it must be admitted that some accident is

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itself the proximate principiant. But if so, there is equal reason for admitting thus much at the first as at the last.

NOTE.

It is not necessary to throw into the shape of a Proposition the question bearing upon the conditions necessary to the formal causality of an Accident; since the answer is obvious. As in the instance of the substantial Form, the only condition, (exclusive of the necessity of an efficient cause), requisite for the exercise of such causality, is a disposition on the part of the subject to receive the accidental Form. Thus, for instance, *iron* has no natural receptivity of *sweetness*; therefore, sweetness cannot exercise its formal causality in iron.

PROPOSITION CCXXVII.

The causality of quantity is its actual inherence in its Subject.

DECLARATION OF THE PROPOSITION.

As has been already remarked, there is something peculiar in the nature of quantity; for it partakes more of the nature of matter than of Form. Hence it is a common saying among the Doctors of the School, that quantity follows the matter. In fact, it may be said to exercise a double causality; for it is a formal cause of substance and proximate material cause of qualities. Hence, it is not impossible, *de potentia absoluta*, that it should continue to exist in a state of separation from the substance which it once informed; for there still remains that it should be the Subject of the qualities. Thus, then, though a *disposition* to inhere in its Subject is, *actual inherence* is not, of its essence. Therefore, actual inherence is something really distinct from its entity. Consequently, the formal causality of quantity is not the Form itself but the actual conjunction of the Form with its Subject, that is to say, its actual inherence; since in its case the two are really distinct.

PROPOSITION CCXXVIII.

The causality of a qualitative Form is the Form itself as essentially inherent in its immediate Subject.

DECLARATION OF THE PROPOSITION.

Quality is distinguished from quantity, in that the former is a

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pure act, whereas quantity is at once an act and a potentiality. Even substantial spiritual Forms have something analogous to this double nature, with the exception of the One Infinite Form Who is Pure Act. For Angelic Natures themselves, which are subsistent spiritual Forms, are potentialities after a manner as well as acts; since they have properties,—to wit, the faculties of intellect and will. Hence, in alluding to them St. Thomas says: 'If there is a Form that in one respect is actual and in another respect potential, it will only be a Subject in so far as it is potential[1].' Therefore, certain even substantial Forms may be said to be partly one, partly the other; but there is a great difference between their case and that of quantity, as is plain. For they are integral substances and, as a consequence, exist in their own right; and then, secondly, the accidents of spiritual natures are themselves spiritual, so that there is no physical composition of Form and Subject. Suarez denies that any Form can exercise the functions of a Form in a Form distinct from itself[2]. But, unless he uses the term *Form* in the second instance reduplicatively,—that is to say, *as* Form,—he is in manifest contradiction with the teaching of the Angelic Doctor, as just quoted; and it is hard to understand how he can admit the information of quantity by quality.

Now, qualities in general, (unless perhaps an exception should be made on behalf of certain qualities that are included under the second species), are acts only, and *in no case whatsoever* are actuated out of their own Category. Quantity, on the other hand, is so markedly potential,—and that too in regard of other Categories,—that, according to the opinion of Suarez and others, it is the proper accident of matter; as though included in the material cause of substance. As an act, in any case, it informs the body; as a potentiality, it postulates the information of qualities for its own actuation. Consequently, if by an Act of the Divine Omnipotence it should remain in a state of separation from the substance that it once actuated; it loses itself (so to say) as act, but remains as a passive potentiality. Hence it follows that, within the sphere of accidental being, it would in such case assume something like the nature of primordial matter; and it may therefore be safely doubted,

[1] 'Si autem aliqua forma sit quae secundum aliquid sit in actu, et secundum aliquid in potentia; secundum hoc tantum erit subjectum, secundum quod est in potentia.' *Spiritu. a.* 1, 1[m].

[2] 'Una forma non causat formaliter aliam formam.' *Metaph. Disp.* xvi, *sect.* 1, *n.* 18.

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whether *de potentia absoluta* it could exist in the said state of separation, unless actually informed by its qualities. But, on the other hand, qualities are purely actuating Forms. Thus, for instance, the *yellow in a jasmine-flower* simply informs, or actuates, the quantity of the petals and, by means of the quantity, the petals themselves. It has no other either formal or material function. There is an instrumental causality which it possesses; but that is altogether outside the present question.

If follows from the preceding exposition, that the arguments adduced in proof of the inseparability of the substantial Form from its Subject apply with equal force to the case of qualities; for, as will be explained presently, accidental—like substantial—Forms are educed from the potentiality of their Subject, and have an essential dependence upon it. Indeed, the arguments are in one respect more cogent when applied to qualities than when applied to substantial Forms; because the latter are, so to say, in potentiality as to their faculties and forces. If, then, qualities could be separated from their Subject, (since they are actuating acts simply and exclusively); they would be acts of nothing,—that is, no acts at all,—that is, absolute nothingness.

Here, however, it is necessary to interpose a remark; otherwise, the reader might labour under a false impression. The immediate Subject of qualities is,—it is necessary to repeat,—quantity; and it is only through the medium of this latter that the qualities inhere in substance. When, then, it is said that a quality is inseparable *de potentia absoluta* from its Subject; the meaning is, that it is so inseparable from its *immediate* Subject, i. e. quantity. For, seeing that it inheres in substance, only through the medium of quantity; if quantity is inseparable *de potentia absoluta* from substance, it will follow that quality is likewise separable from substance, although incapable of separation from quantity, its immediate Subject,—or rather, because inseparable from the latter, it is separable from the former.

It is here affirmed, then, that it is absolutely impossible for qualities to be preserved in a state of separation from the quantity which they inform. For this assertion we have the plain authority of the Angelic Doctor. For, treating expressly of this question, he writes as if with a smile: 'The nature of whiteness by a miracle might be made to be without any quantity; nevertheless, such whiteness would not be the same as *this*,' (i. e. individual) 'sensible

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whiteness, but would be a sort of intelligible Form, like those separate Forms that Plato invented;' that is to say, if anything real, an exemplar Idea in the Mind of God. 'But that this sensible individuated whiteness should exist without quantity, is impossible; although it is possible that individuated quantity should exist without substance[1].' If this be true, then actual inherence in its immediate Subject is of the essential nature of a quality. Therefore it follows that there is no real distinction between its *actual* entity and its inhesion. Its existence is in quantity and, through quantity, in the material substance.

NOTE.

The truth maintained in this Proposition is equally applicable, in its way, to the fourth Category,—viz. that of Relation; but it would not be possible to demonstrate this assertion without supposing on the part of the reader a knowledge touching *relations*, which it is intended to set before him in the seventh Book. Suffice it here to say, that it is impossible *de potentia absoluta* to separate either fatherhood, or the real foundation on which fatherhood rests, from the father of whom the relation is predicated.

§ 3.

Effects of the formal causality of accidental Forms.

PROPOSITION CCXXIX.

The primary and adequate effect of the formal causality of accidents is the accidental composite.

DECLARATION OF THE PROPOSITION.

It does not require many words to establish the truth of the above Enunciation; more particularly after our previous treatment of the parallel question touching the adequate effect of the substantial Form. Let the argument be put, then, in the following shape. That is the primary and adequate effect of a cause within the limits of a given causality, which is the adequate term of its natural operation or, in other words, the end of its essential energy. But

[1] 'Posset ergo fieri miraculo ut natura albedinis subsisteret absque omni quantitate; tamen illa albedo non esset sicut haec albedo sensibilis, sed esset quaedam forma intelligibilis ad modum formarum separatarum, quas Plato posuit. Sed quod haec albedo sensibilis individuata esset sine quantitate, fieri non posset, quamvis fieri possit quod quantitas individuata sit sine substantia.' *Quol. L.* vii, *a.* 10, *c.*

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the accidental composite is the adequate term of the natural operation, or essential energy, of the accidental Form within the limits of its formal causality. Therefore, etc. The *Minor* is thus declared. The accidental composite is the integral body, (in the instance of material substance), constituted by the substantial Subject together with its accident or accidents. Such are all existing substances, whether material or immaterial. If material substances), which are the main object of inquiry at present), were not thus constituted in conjunction with their accidents, they would neither be subject to sensile perception nor capable of their natural operation. For in the natural order all the interaction of substances in their various grades of excellence, by which the universal harmony and Divine meaning of the visible—to say nothing of the invisible—creation are realized, is effected through the instrumentality of accidents; so that, without them, the action of each material substance would be purely immanent. Accordingly, if material substances should be without quantity and qualities, they would be in solitary confinement,—in presence of one another, as though they were not, perfectly idle in the commonwealth of being. But the entity of accident is not Being, but Being of Being. It is the act of substance, as the substantial Form is the act of matter. It is that by which another has Being, rather than Being itself. In other words, all that it has and is, it has and is in, and for the sake of, substance. Hence it follows, that the term of its natural operation and of its essential energy is not the mere actuation of substance, but the perfecting of the latter in its operation by conjunction with it in one and the same composite. As, then, the adequate term of the formal causality of the substantial Form is the substantial composite; so the adequate term of the formal causality of the accidental Form is the accidental composite.

The same, *servatis servandis*, holds good in the instance of spiritual accidental Forms relatively to spiritual substance.

PROPOSITION CCXXX.

The formal and proximate effect of the causality of the accidental Form is the actuation of the accidental potentiality of its Subject.

Prolegomenon.

In the opinion of Suarez, the Subject cannot be allowed to be one of the effects of the accidental Form. Against the opposite opinion,

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which is here maintained, he brings forward certain objections that will be considered in their place.

Declaration of the Proposition.

(i) The constitution of the accidental composite cannot be the formal and proximate effect of the causality of an accidental Form; because the constituted accidental composite essentially includes the accident itself. But no Form, in strictness of speech, can be formal cause of itself. (ii) The formal effect of every Form is actuation, not constitution. For every Form is an act; and the correlative of *act* is *actuated*. The constitution of the composite follows as a consequence. Further: Since the constitution of the composite is by the actuation of the substance, not the actuation of the substance by the constitution of the composite; it follows that the actuation is the proximate effect. (iii) The accident, *as* Form, formally regards substance as Subject of its information, not as partner with it in the constitution of the accidental composite.

Such is the plain teaching of the Angelic Doctor. 'The essential nature of accident,' he writes, 'is to inhere and depend, and to make composition with the Subject *by way of consequence*[1].' And, though in other passages he corrects the former part of the same definition, forasmuch as it might seem to imply that *actual* inherence is of the essence of accident; yet he invariably retains the notion of aptitudinal inherence in, and of necessary dependence of its being on, the Subject, as of that which is of the essence of accident. Thus, he declares that 'It belongs to the quiddity or essence, of accident, to have being in the Subject[2].' So, again, he defines accident to be 'An entity whose due it is to have being in another[3];' or, as in another place, 'An entity to whose nature it is due that it should have being in another[4].' Therefore, according to St. Thomas, its proximate and formal term of causality is the accidental actuation of the Subject by its inherence in it, and 'it makes composition with its Subject as a consequence.'

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[1] 'Ratio autem accidentis imperfectionem continet: quia esse accidentis est inesse et dependere, et compositionem facere cum subjecto per consequens.' 1 *d.* viii, *Q.* 4, *a.* 3, *c.*

[2] 'Quidditati autem, sive essentiae accidentis competit habere *esse* in subjecto.' 3ª lxxvii, 1, 2m.

[3] 'Res cui debetur esse in alio.' 4 *d.* xii, *Q.* 1, *a.* 1, *q.* 1, 2m.

[4] 'Adhuc natura ejus remanet talis ut ei debeatur esse in alio.' *Quol. L. IX*, *a.* 5, 2m.

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' DIFFICULTIES.

I. If we admit that the Subject can be an effect of the formal causality of accident, it will consequently be necessary to admit a certain dependence of substance on accident. But this is impossible for the following reason. The adequate Subject of accident is substance. Therefore, substance is naturally prior to accident. Therefore it cannot depend on accident. The above argument is further confirmed as follows. The essence of the Subject is substantial. Therefore, it is incongruous to suppose its dependence anywise on the imperfect entities of other Categories. Accordingly, all are agreed that substance does not depend on accident as on a proper formal cause.

ANSWER. The *Antecedent* is granted; the *Consequent* denied. Now for the proofs adduced in support of the latter. It is undeniable that *substance is the adequate Subject of accident;* but that *substance is naturally prior to accident*, needs distinction. *It is naturally prior to accident* in its own substantial entity, that is to say, in its essential composition as constituted of matter and its substantial Form, —granted; *it is naturally prior to accident* in its real potentiality to the accidental Form,—a Subdistinction is necessary: *It is naturally prior* in order of genesis,—granted; *it is naturally prior* in the constitution of the accidental composite,—denied. To explain the above distinction: It is quite certain that substance, in its own essential nature, is incapable of any dependence upon an accidental Form; since it is integrally constituted prior, in order of nature, to its accidental information. But it is equally true that it has an accidental potentiality, or real subjective capacity and aptitude, for receiving accidents; and, though this potentiality is naturally prior in order of generation,—because it is, as it were, the immediate Subject,—nevertheless, it is not prior in the constituted composite or in absolute nobility of Being. Consequently, in this respect substance admits of a dependence on its accidental Form for its completorial, not its essential, perfection. Thus, for instance, deprive material substance of its quantity, it would be most nearly represented, in its relation to sensile perception, by a mathematical point. Much the same may be said for the accidents by which a spiritual substance is perfected. Hence, the Angelic Doctor, referring to the soul of man, observes that 'even the created truth, which is in our intellect, is greater than the soul,—not simply but in

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a certain sort of way,—forasmuch as it is a perfection of the soul; just as science also might be said to be greater than the soul[1].' And again: 'Substance is simply nobler than accident; nevertheless, an accident is in a sort of way nobler than substance, because it perfects substance in some accidental being[2].' Once more, with yet greater clearness and precision: 'Created science is indeed nobler than the soul of Christ after a manner, because it is an act of the latter,—in the same way as colour is nobler than its body, and every accident is nobler than its Subject, in so far as the former is compared to the latter as act to potentiality. But simply,' or absolutely, 'the Subject is nobler than the accident[3].' Lastly, in still plainer terms: 'No accident is nobler than its Subject as regards its mode of Being; because Substance is Being of itself, while accident is Being in another. But in so far as accident is in act and a Form of substance, there is nothing to prevent accident from being nobler than substance; for in this way it is compared to substance as act to potentiality and as perfectness to the perfectible[4].' There are two expressions that occur in these quotations from the Angelic Doctor, which stand perhaps in need of explanation;—for the sake of those at least who make their first acquaintance with the Scholastic Philosophy in this Work. *Created truth*, then, and *created science* are respectively contradistinguished from the *Uncreated Truth* and the *Uncreated Science*. *Created truth*, therefore, means, truth existing as an accidental perfection in the created, or finite, intellect; and *created science* means the demonstrative habit of the certain cognition of things by their causes, as accidentally perfective of the intellectual faculty in the creature.

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[1] 'Et tamen etiam veritas creata, quae est in intellectu nostro, est major anima non simpliciter, sed secundum quid, in quantum est perfectio ejus, sicut etiam scientia posset dici major anima.' 1ª xvi, 6, 1ᵐ.

[2] 'Sicut substantia est simpliciter dignior accidente; aliquod tamen accidens est secundum quid dignius substantia, in quantum perficit substantiam in aliquo esse accidentali.' 1-2ªᵉ lxvi, 4, *c.*, *in f.*

[3] 'Scientia creata est quidem secundum quid anima Christi nobilior, in quantum est actus ejus; secundum quem modum et color ejus corpore nobilior est, et quodlibet accidens suo subjecto, prout comparatur ad ipsum sicut actus ad potentiam. Simpliciter autem subjectum est nobilius accidente.' *Verit Q.* xx, *a.* 1, 1ᵐ.

[4] 'Nullum accidens est dignius subjecto quantum ad modum essendi; quia substantia est ens per se, accidens vero ens in alio. Sed inquantum accidens est actus et forma substantiae, nihil prohibet accidens esse dignius substantia; sic enim comparatur ad ipsam ut actus ad potentiam, et perfectio ad perfectibile.' *Carit.*, (*aliter*, *Virt. Q.* ii), *a.* 1, 22ᵐ.

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The answer to the confirmatory argument is virtually included in the explanation given above, and in the accompanying quotations from St. Thomas. It would indeed be incongruous to suppose that substance could depend in its essential nature on accident; but it is not incongruous to suppose that it should depend on accident for its completorial perfectness. Wherefore, albeit all are agreed that substance cannot depend on accident as *on its proper formal cause,* because that would be to transform an accidental into a substantial Form; yet this in no wise prevents substance from depending, in its potentiality of actuation by the accidental Form, on the accidental act by which it receives an accidental perfection extrinsic to its own essential nature.

II. That a substance should be in real potentiality to an accidental Form, is by no means necessary; since it is not universal. For there are many instances of accidental Forms that do not postulate any real potentiality on the part of their Subject. In their case, therefore, there is no real dependence of substance on its accident.

ANSWER. It is true that there are many such accidents; for it is manifest that substance can in no possible sense really depend on those of its accidents which affect their Subject only by an extrinsic denomination. But it is equally true that accidents of this description do not enter into the question, because they exercise no real physical causality; whereas we are now exclusively concerned with the real causality of accidents, and consequently with accidents that are really causal. Much the same may be said of accidents that are purely modal and simply terminate substance. But with regard to all accidents that exercise a real causality, it is certain that they are acts,—that their substantial Subject is in real potentiality to them,—and that, accordingly, there is so far a real dependence of substance upon them, after the manner already explained.

III. The conclusion enunciated in the last solution is denied. For quantity immediately informs the matter alone; and, as being a necessary disposition of matter for the reception of the Form, partakes in the nature of a material cause. Therefore, the substantial composite by no means depends upon quantity as upon a Form; although quantity exhibits a real intrinsic causality.

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ANSWER. One is inclined to fear, upon looking at the objection as it stands, lest the above statement should not represent the argument as Suarez meant it. If he has been misrepresented, the misrepresentation is unintentional.

In reply, then, it is to be observed that this immediate actuation of matter *alone* by the quantitative Form is an assumption, and seems to be plainly at variance with the mind of the Angelic Doctor. But the discussion of this opinion of Suarez must be relegated to its proper place, where the nature of quantity will be professedly treated. Let us, then,—merely for the sake of argument,—suppose that the hypothesis of Suarez is true. What has been gained as touching the problem determined by the present Proposition? Absolutely nothing. All that we have to face is a change of Subject and a consequent change in the term of dependence. The dependence itself remains as before. It is no longer the integral substance that is considered as Subject of the quantitative Form, but primordial matter which is thus invested,—itself a pure passive potentiality,—with a new potentiality foreign to its own entity,—that, viz. of actuation by an accidental Form. But,—supposing, (while by no means admitting), the possibility of this,—then the causality of the quantitative Form would be exercised on matter which, in the given hypothesis, would receive the accidental perfection that the more common opinion attributes to the integral substance. In such case, quantity would be a material disposition relatively to the substantial Form, (which under any hypothesis must be admitted to be true, however variously explained); while exercising,—or rather, because exercising,—its formal causality in the matter.

IV. The actuation of the Subject by the accidental Form is identical with the composition of the accidental Form. Therefore, the distinction between the primary and adequate effect of accident on the one hand, and its proximate and formal effect on the other, is unnecessary and useless.

ANSWER. Undoubtedly, so far as regards the physical result, the accidental information of substance and the constitution of the accidental composite are identical. But the same may be said of the substantial information of matter and the constitution of the substantial composite. There is, we freely admit, a marked difference between the two. For in the substantial composition each

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constituent is necessary to the existence of the other; while in the accidental composition, though the accidental Form naturally depends for its existence on the Subject, the Subject does not depend for its existence on the Form. But this distinction, however important in itself, does not affect the present question; or, if it does, tells in favour of the accidental composite, since it leaves the information, (so to say), more free. Accordingly, since Suarez admits the distinction in one order; to be logically consequent, he should not reject it in the other. However, to answer the difficulty directly: Though there is confessedly no real distinction, there is a conceptual distinction, (that is to say, a logical distinction based on a reality); and such is the nature of a metaphysical distinction.

PROPOSITION CCXXXI.

From accidental composition there does not result an entity simply or absolutely one, for two reasons; first, because such composition presupposes the integral constitution of the Subject that is therein informed, and secondly, because no essential nature is capable of being perfected in itself by any whatsoever entity of another Category.

PROLEGOMENON.

The present Thesis has been introduced in order to meet a special difficulty connected with the question of accidental composition. It is universally admitted,—and is otherwise patent,—that, in the instance of those accidents which exercise a real formal causality, there is a real physical union between the substance and its accident. Whence comes it, then, that the composite, according to the consentient judgment of all the Doctors of the School, is not simply and absolutely, but only adventitiously, one? Such is the problem that awaits solution.

The Proposition resolves itself into two Members.

I. IN THE FIRST MEMBER of the Thesis it is asserted, that *one reason why the accidental composite is not simply and absolutely one, may be discovered in the fact, that such composition presupposes the integral constitution of the Subject therein informed;* which is thus declared. As we have seen in the third Book, unity is a transcendental attribute of Being. Hence, the nature of the unity follows upon the nature of the Being. Now, Being is absolutely one by its essence. Consequently, all that supervenes can in no wise

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affect its simple and absolute unity, but will cause at the most an adventitious or accidental unity. But in accidental composition the substance is presupposed as constituted in its integral essence. Therefore, the unity of the accidental composite is not an absolute unity. Thus, a man now with black, now with grey hair, does not in either case exhibit a simple unity; since the essential unity of the man remains, whether his hair be black or grey. Consequently, the physical union of black or grey hair with the human Subject causes a temporary and purely adventitious unity, for such time as it lasts.

II. IN THE SECOND MEMBER it is asserted, that *another reason why an accidental composite cannot claim simple or absolute unity is, because no essential nature is capable of being perfected in itself by any whatsoever entity of another Category.* This second reason has been specially urged by Suarez, in order to obviate the difficulty generated by his opinion touching the information of matter by quantity, which is not satisfactorily met, (as is plain), by the previous argument. Nevertheless, as the argument is of singular strength quite independently of its special application, it has been expressly inserted in the Enunciation.

In order that the composition of a Form with its Subject may exhibit simple, or absolute, unity, it is necessary that the Subject should be actuated by a Form within the limits of its own Category. For the essence of any finite entity whatsoever is limited to its own Category, as is self-evident; and hence it follows that any completion of its essence must be effected within the limits of its own Category. Therefore, all addition that it receives outside such Category is extra-essential. But an entity is simply, or absolutely, one by its essence. Hence, it follows that whatsoever actuation by a Form belonging to another Category cannot essentially perfect the Subject, and in consequence cannot cause that the resultant composite should be absolutely one.

PROPOSITION CCXXXII.

Although there can be but one accidental Form to each accidental composite; nevertheless, many accidental Forms can actuate one and the same substantial Subject, because by their information they do not give absolute being to the Subject but only additional and adventitious being.

This Proposition manifestly contains three Members, each of which we will consider apart.

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I. In the first Member it is asserted that *there can be but one accidental Form to each accidental composite;* which is thus declared. The same arguments which went to prove that there can be only one substantial Form in one substantial composite apply with equal force to the accidental composite. Indeed, in one respect they assume a greater cogency; because the passive potentiality of the integral substance in regard of the accidental Form is not, like the potentiality of primordial matter, a receptivity capable of all material Forms and indifferent to one or another; since it is not potential of all accidental Forms, and exhibits an aptitude for, and proportion with, one particular Form even within the same species of the same Category. But the natural requirements of this potentiality are fully satisfied by one act; a second, therefore, would be superfluous. Nay more: A new Form under the circumstances would be impossible; since this second act would find no potentiality to actuate. Neither is it possible to suppose that in the same substance, or in the same part of the same substance, there could be two potentialities specifically the same; for, in such a hypothesis, the same substance or the same part of the same substance would be at once in potentiality and in act relatively to the same specific accident. But this is a contradiction in terms. No entity, for instance, can be at one and the same time *red* and *not-red.*

Corollary.

It follows that, as there can be but one accidental Form to each accidental effect, so there can be but one accidental effect to one accidental Form.

II. In the second Member of the Proposition it is declared, that *many accidental Forms can actuate one and the same substantial Subject.* This is universally acknowledged. Hence the old saying that *When Socrates was born, all the Categories were born with him.* Moreover, it is patent to sensile perception. Every body has quantity, quality, relation, etc. Nay, repeatedly it happens that different parts of the same body have synchronously different accidental Forms within the same species; as colour, for instance, is different in different parts of a plant or animal, and in some fruits the stone is hard and the pulp soft,—to say nothing of the *successive* changes of accidental Forms in one and the same substance during the lapse of years. It follows from this multiplicity of accidental

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Forms, that there must be a corresponding multiplicity of accidental potentialities in the same Subject; and, if every part and organ of the body is capable of a multiplicity of such Forms, it can be imagined what a number may be aggregated in the integral body itself. It remains, then, to inquire, how this is possible. Why is it that, while one portion of matter only admits of information by one substantial Form, one and the same integral substance is receptive of any number of accidental Forms,—of Forms that really and physically inform their Subject? Such is the problem that is solved in the next Member.

III. The third Member,—in which it is affirmed that *the reason why this multiplication of accidents is possible in one and the same substance is, because accidental Forms by information of their Subject do not give absolute, but only adventitious, Being to the latter,*—is thus declared. Substantial bodily Forms can neither ordinately nor accidentally be conjoined in the same portion of matter according to the order of nature; because they determine the specific nature. On the hypothesis, therefore, that two such Forms could either ordinately or by accident inform the same Subject, there would be one being with two essences; which is a manifest absurdity. It may be as well to observe parenthetically, that by the *ordinate* conjunction of two or more Forms is to be understood a union which involves a certain order and relation between them such as subsists between the quantity and qualities of a body; by *accidental* conjunction, that which takes place without any such order or relation,—as it were, by hap-hazard. Now, accidental Forms may be united in the same Subject both ordinately and by accident. An instance of the former has been given; instances of the latter are numerous. They meet us everywhere. Thus, for instance, the varieties of colour in the petals of a pansy, —the union of sweetness with a brown colour in moist sugar,—length of proboscis, smallness of eye, flapping ears, ivory tusks, etc., in the African elephant,—are all instances of the conjunction, apparently by accident, of a number of accidental Forms in the same Subject. The reason why such multiplication is possible may be found in the fact, that accident does not affect or modify in the slightest degree the specific nature of its Subject. If, then, accident does not touch the essential Being of substance but only adds to it some accidental perfection extraneous to the specific nature of its Subject; since such extraneous or adventitious perfection

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leaves the unity of essence untouched, it is plain that it is capable of various and indefinite amplification.

Corollary.

There is a similarity at once and a dissimilarity between a substantial and an accidental Form. Both are the causes of one effect and are acts of one potentiality. Hence, the accidental, like the substantial, composite is constituted by the causality of one only Form. In both cases the Form is dependent upon the Subject for its origin and existence, (always excepting the human soul). They agree likewise in this, viz. that each determines and perfects its Subject in its own order. Finally, both are educed out of the potentiality of their Subject. But they differ in many respects. The most prominent and important difference is this: The substantial Form gives being to its Subject, because the latter is nothing else but a passive potentiality. An accidental Form, on the other hand, presupposes the integral being of its Subject. Hence, in the instance of substantial composition actuality appertains primarily to the Form; whereas in accidental composition actuality primarily attaches to the Subject. Wherefore, in the third place, the indigence and necessity of a Form is absolute in substantial composition; in accidental composition,—or rather, in the accidental composite, — it is conditional. Without the substantial Form no actual entity; without the accidental Form there remains an integral entity, but not *such* or *such*. Hence, lastly, there can be but one substantial Form, but there may be many accidental Forms in the same substance, since this latter may enter into countless varieties of accidental composition. The above distinctions are confirmed by the authority of the Angelic Doctor. 'A substantial and an accidental Form,' he observes, 'partly agree and partly differ. They agree in this, that each is an act; and that according to each,'—by means of each,—'something some way or other is in act. But they differ in two points. The first is, that a substantial Form causes being simply, and its Subject is an entity that is in pure potentiality; whereas an accidental Form does not cause being simply, but *such* or *so great* being or being *in a certain condition*, for its Subject is entity in act. Hence it is clear that actuality is found in the substantial Form prior to its discovery in the Subject of the Form; and, since that which is first is cause in every genus, the substantial Form causes actual being in its Subject. But, con-

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versely, actuality is found in the Subject of an accidental Form, prior to the accidental Form itself. Hence, the actuality of an accidental Form is caused by the actuality of the Subject; so that the Subject, in so far as it is in potentiality, is susceptive of the accidental Form, but in so far as it is in act, is productive of the same. This I say of accident properly and absolutely such; for as regards extraneous accident the Subject is receptive only, while that which is productive of such accident is an intrinsic agent. And in the next place a substantial and an accidental Form differ, because, (seeing that the less principal is for the sake of the more principal), matter is for the sake of the substantial Form, but conversely the accidental Form is for the sake of the perfecting of the Subject[1].'

§ 4.

The eduction of accidental Forms out of the potentiality of their Subject.

PROPOSITION CCXXXIII.

It is evident that accidents which only extrinsically denominate their Subject are not educed out of the potentiality of the latter.

DECLARATION OF THE PROPOSITION.

The truth of the present Enunciation is so evident, that it would have been left to itself, save that by its introduction an occasion is afforded for throwing further light on the nature of such accidents.

[1] 'Forma substantialis et accidentalis partim conveniunt et partim differunt. Conveniunt quidem in hoc quod utraque est actus, et secundum utramque est aliquid quodammodo in actu; differunt autem in duobus. Primo quidem, quia forma substantialis facit esse simpliciter, et ejus subjectum est ens in potentia tantum; forma autem accidentalis non facit esse simpliciter, sed esse tale, aut tantum, aut aliquo modo se habens: subjectum enim ejus est ens in actu. Unde patet quod actualitas per prius invenitur in forma substantiali quam in ejus subjecto. Et quia primum est causa in quolibet genere, forma substantialis causat esse in actu in suo subjecto. Sed e converso actualitas per prius invenitur in subjecto formae accidentalis quam in forma accidentali; unde actualitas formae accidentalis causatur ab actualitate subjecti; ita quod subjectum, inquantum est in potentia, est susceptivum formae accidentalis; inquantum autem est in actu, est ejus productivum. Et hoc dico de proprio et per se accidente; nam respectu accidentis extranei subjectum est susceptivum tantum; productivum vero talis accidentis est agens extrinsecum. Secundo autem differunt substantialis forma et accidentalis, quia cum minus principale sit propter principalius, materia est propter formam substantialem; sed e converso forma accidentalis est propter completionem subjecti.' 1ae lxxvii, 6, *o.*

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Wherefore,—to expedite the proof of the Thesis,—let this much suffice. An accident that only affects its Subject by an extrinsic denomination is outside that Subject,—exercises no real causality over it,—and has a certain real indeed, but merely external, connection with it. Therefore it is plain that an accident of such a nature cannot possibly be educed from the potentiality of its Subject; because its eduction would be tantamount to its inhesion.

But a question incidentally arises touching the extrinsic entity which assumes the character of an accident in regard of the Subject-substance. Since it cannot be evolved out of the potentiality of the Subject that it dominates; what is the nature of its genesis? The answer to this query is virtually included in the fact, that the extraneous accident is another entity really distinct from its putative Subject. It may, therefore, be either a substance itself,—as in the instance of a man's clothes,—or it may be an accident or a mode. In each case it follows the order of generation proper to its nature;—if a substance, it will be constituted in act by its Form,—if an accident in the proper sense, by eduction out of the potentiality of its own Subject,—similarly, if a mode. Hence, in the new production of any entity that extrinsically denominates another, we must not seek for the reason or nature of its genesis in the entity that it extrinsically denominates, but either in itself or in that Subject of which it is the intrinsic accident; and thus contemplated, it falls under the ordinary laws, already discussed, of substantial or accidental constitution.

PROPOSITION CCXXXIV.

All accidents that in the order of nature exercise real formal causality in their Subject are educed out of the potentiality of that Subject.

Declaration of the Proposition.

After the elaborate discussion in the third Article of this Book touching the eduction of the substantial Form out of the potentiality of the matter, the above Enunciation admits of easy proof. In the genesis of an accident such as is here described all the conditions that together explain and satisfy what is meant by the eduction of a Form out of its Subject are present. For (i) Such an

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accident is not so much an entity itself as that by which another entity is constituted in its perfection. (ii) By reason of its imperfect or incomplete entity it cannot naturally become the adequate term of either creative or productive action. (iii) Existence is not absolutely predicable of it in order of nature. (iv) It cannot be produced of itself, but requires to be evolved out of another as its source. (v) It cannot naturally continue by itself, but needs the support of the Subject whence it derives its origin. So far negatively. Positively, such an accident fulfils the two conditions; viz. (i) That its substantial Subject, (and the same may be said proportionately in regard of the immediate accidental Subject, where there is one),—as claiming priority of nature over the Form and as containing within itself a natural aptitude for, and potential inclusion of, the same,—can be, and is, the source from which it springs and the Subject on which it depends for its existence and preservation. (ii) That itself has an essential aptitude and disposition for inhering in its Subject. (See the Summary at the end of Article iii.).

PROPOSITION CCXXXV.

Intentional qualities are educed out of the potentiality of the Subject.

Prolegomenon.

This is a point which has been made a subject of debate in the Schools, though apparently with little reason. Nor, indeed, are the authorities that have maintained the opinion opposed to the one enunciated in the present Proposition, of such weight as to demand at our hands any great labour of proof. The discussion, however, has been introduced here; because it will incidentally help to generate a more scientific knowledge touching the nature of accidental Forms.

It is necessary, first of all, clearly to understand what is meant by *intentional qualities*, which naturally range themselves under the third species of Quality. An Intention, (see the explanation of this term in the Glossary at the end of the first Volume), is primarily applied, in its philosophical use, to the stretching of the mind over some object. But the mind in this respect may be considered passively as well as actively;—that is to say, it may be regarded as stretched over by the object, not stretching itself over. Hence the

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difference in ideology between an *impressed* and *expressed* species. In the former the intellect is receptive rather than productive. The word is sown. In the latter, the intellect is productive rather than receptive. The word has fructified. The same distinction applies to other lower faculties of the soul; and, as intellectual concepts are primordially received from the senses, we may go on to these latter. We find that the senses likewise have their *impressed* and *expressed* species. In the instance of the former there is something passively received in the senses from the external object; in the latter we are in presence of a sensile perception, or *quasi* cognition, such as is common to us with irrational animals. These *species* must be carefully distinguished from the purely material impression produced in the organ of sense. This latter is productive of the former; but the two are distinct, as soul is distinct from body. If we limit our attention to these *impressed* species, whether intellectual or sensile, it is easy to see that in both cases there is something real which has stretched itself over the faculty and added to its essential nature, immutable in itself,—some accidental complement, or perfection, which was not there before. To illustrate from the sense of sight: When an object,—say, a beautiful landscape,—through the instrumentality of the eye impresses itself on this sensile faculty of the soul; the landscape is, so to say, reproduced there. But it is evidently not a material,—or that which is ordinarily called a physical,—reproduction; for houses and fields and rivers and hedges and mountains would find some difficulty in passing through the gateway of the retina and along the optic nerve. Moreover, the human soul,—forasmuch as it is simple and spiritual in its essential nature,—could make nothing of such a material invasion, even supposing that it were possible. Yet the landscape is really there somehow. To give it a determining name, it is said to be *intentionally* present; because its immaterial presentative really stretches itself, so to speak, over the psychical faculty of sight. That real something, which is presentative of the material object, is evidently an accident; for it was not and now is,—it comes and it goes,—while the man who sees,—body and soul,—remains substantially the same. It is a real Form and a pure Form, really actuating the Subject. It cannot be quantity or relation, as is self-evident; yet it is an accident. It must, then, be a quality; and, in virtue of its particular nature, it is called an *intentional* quality. It is likewise

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called a *species*, following the primitive meaning of the word as applied to bodily form. To denote its pure passivity, it is called an *impressed* species; for it resembles the impression made by a seal upon the wax. Transfer these terms, (as they have been transferred), with their appropriate significations to that first germ of the intellectual concept, received into the intellectual faculty from the sensile species purified and transformed; you have an *intellectual impressed species* which is likewise, and for the same reasons, an intentional quality in the spiritual order.

The question now mooted is, whether these intentional qualities, like other real qualities, are educed from the potentiality of their Subject. Two things, *ex antecesso*, are quite plain. The one is, that these intentional qualities are *a real something* in the faculty that claims them. The *intentional* presence of the landscape in the visual faculty of the soul is a real addition and perfection to that inner sense considered as existing in its previous state of pure potentiality. The other is, that such intentional quality is intrinsic to the soul's faculty of sense. Here, it is of the utmost necessity to distinguish accurately between the material object and its intentional presentative. The object is the efficient, the presentative is the formal, cause; the former is extrinsic, the latter intrinsic, to the faculty. In like manner, it behoves us carefully to distinguish between the expressed and impressed species. The former is term of the faculty as efficient cause; the latter is a Form that actuates the faculty considered as a passive potentiality. It is this latter that falls more directly within the scope of the present inquiry.

Declaration of the Proposition.

These intentional qualities are produced by natural agency. Therefore, it is quite plain that they are not created. Consequently, they presuppose a Subject concurring by its own natural potentiality, as a material cause, to their genesis and existence. Thus, all the conditions requisite for the eduction of a Form out of the potentiality of its Subject are verified. For (i) This intentional quality is something real and something accidental to the faculty; therefore, its essence is not *to be*, but *to be in*, at least, aptitudinally. (ii) It is a real Form, intrinsic in the faculty. (iii) It is not created or creatable. (iv) It depends upon the faculty, as Subject, for its existence and preservation. There could be no presentation of the landscape in the soul, if there were no inner sense of sight. (v) It

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depends for its existence and continuance on the soul, as is evident. (vi) Not even *de potentia absoluta* could it exist apart from the soul; for in its case there is no question of quantity. Wherefore, it is educed out of the potentiality of its Subject.

DIFFICULTIES.

I. These intentional qualities are produced in an instant. Therefore, they are not educed out of the potentiality of their Subject; for accidental Forms so educed are produced gradually.

ANSWER. It is anything but essential to an actuating Form educed out of the potentiality of its Subject, that it should be educed gradually. All substantial Forms, on the contrary, are produced in an instant. Neither can it be legitimately objected that the previous dispositions of the matter are gradual; because these are anticipatory of the eduction of the Form. The nature of the eduction is not affected, as Suarez justly remarks, by any relation to previous alterations in the matter; but is to be sought for in the intrinsic causality of the eductive action itself, which is instantaneous. Hence, the previous alterations are, as it were, accidental to the eduction of the Form. Neither, again, does it affect the question, that qualitative Forms admit of *more* and *less*; since this will not serve to prove that their production is not instantaneous, as the objection implies. In the first place, the capacity for *more* or *less* is not common to all qualities; and must certainly be denied to these intentional qualities. For, though the latter admit a greater or less distinctness in the representation of the object; yet this relative distinctness is not a matter of growth but of comparison. One sensile representation is more distinct and faithful than another; nevertheless, a sensile or intellectual species once impressed on the faculty proportioned to receive it, it admits in its own entity neither of augment nor of diminution. Wherefore, such relative distinctness is beside the question. Then in the next place, even if these sensile or intellectual species should have been capable of representative growth, the question does not turn on the after increase of the quality, but on its first genesis.

II. These intentional qualities are produced without the resistance and expulsion of the contrary and, in consequence, without a real transformation of the Subject. Therefore, they are not educed out of the potentiality of the Subject.

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ANSWER. i. As to the absence of contrariety, we have the authority of the Philosopher for asserting that contrariety is not a property of qualities in general. Neither is the genesis of one accident necessarily preceded by the expulsion of its contrary. For, in the first place, there are accidents which do not admit of contraries. Such is quantity; such, in particular, are these intentional qualities. Who could imagine the contrary to the sensile presentation of a landscape? Secondly, in the instance of such accidents as admit of contraries, (which the majority of qualities do), there could have been no expulsion of contraries in the creation of simple substances; which is sufficient proof that it is not of the essence of their formal genesis. Further: In the generation of each successive substance there is no,—properly speaking,—*expulsion* of precedent accidental Forms accompanying the genesis of qualities; for the simple reason that, as they essentially accompany the substantial Form, their genesis and the disappearance of preceding incompatible qualities simply constitute an orderly succession. This is sufficiently evinced by the fact that, in the generation of a new bodily substance, certain accidents remain in the new, that were already accidents of the old, substance. It is true that some accidents of the corrupted substance disappear and that other accidents, proper to the new substantial Form, are introduced; but there is no expulsion even here. The old accidents that are incompatible with the new state of things retire with the old Form that they subserved; and the new accidents accompany the new Form as part of its retinue. But the duel is between the substantial Forms; because two cannot reign together in the same body. Thirdly, even in the expulsion of the antecedent substantial Form, which invariably takes place in each natural generation, such concomitant expulsion of the old Form constitutes no *essential* part of the eduction of the new Form; but occurs as though by accident, because of the impossibility that more than one substantial Form should inform the same body. Consequently, should there be no such inconvenience in any given genesis, there would be no necessity for a like expulsion. Wherefore, lastly, there is no necessity for the *expulsion* of a preceding Form in the instance of these intentional qualities. For, since they are accidents, their number in the Subject needs not to be reduced to one; and, since they do not admit of contraries, they are not incompatible in their nature with each other.

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ii. As to the transformation of the Subject, it is of great importance that our concepts should be accurately determined. If by transformation of the Subject, or substance, is meant a change from one accidental Form to another of the same species, it is granted that there is no such transformation in the true sense of the word; but it is denied that such transformation is necessary to the evolution of the accident. But if by transformation of the Subject is meant a transition from a state of accidental potentiality to real accidental actuation,—which is confessedly necessary to the eduction of the accidental form out of the potentiality of the Subject;—then it must be confessed that such a transformation (though the term is misapplied) is necessary, but it is to be added, that the condition is indubitably verified in the instance of these intentional qualities.

§ 5.

Modes.

PROPOSITION CCXXXVI.

Accidental modes exercise real formal causality in their Subject.

PROLEGOMENON.

Accidental modes are so called to distinguish them from *substantial* modes. An accidental mode is a species of accidental Form; but it differs from accident specifically so called, in that it cannot *de potentia absoluta* be separated from its Subject by reason of its defect of entity. It may perhaps be objected to this descriptive definition that, if we accept the teaching of the Angelic Doctor, qualities would in such case be modes, not specific accidents; which is contrary to the universal judgment of the philosophers of the School and of all, in general, who follow the teaching of Aristotle. But careful consideration will serve to show the groundlessness of such a conclusion. There is one deficiency of entity common to all accidental Forms; in that according to the order of nature they cannot exist by themselves, but postulate a Subject of inhesion. There is, again, a certain nobility of some accidental Forms, *as* accidental, by virtue of which these latter essentially postulate actual inhesion in their immediate Subject; and this nobility consists in their being pure Forms without admixture of entitative

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potentiality. Hence, their inseparability from their immediate Subject, even *de potentia absoluta*, does not arise from deficiency in their accidental being but from the impossibility of a purely actuating Form existing *without actuating*. Such are qualities. Accordingly, St. Thomas does not *absolutely* deny the possibility of their separate existence, which he would have done if such possibility arose from a mere deficiency in accidental being; but contents himself with saying that, if they should so exist, they would assume the character of the Platonic Ideas, as commonly understood,—realized universals,—not sensible qualities, because they would be separated from quantity. But modes, on the other hand, cannot be separated *de potentia absoluta* from their Subject, simply by reason of their deficiency in accidental being. They are mere fashions, so to say, of being; yet real. Thus, for instance, *I sit;* and my sitting posture is an accidental mode of my body. It is evidently something real; for my sitting and my standing are not mere fictions of the intellect. The common sense of mankind testifies to the truth of this. In like manner, mathematical forms,—such as the circle, triangle, cube, cone, etc.,—are modes of quantity. No one, but a pure idealist, would venture to deny that these shapes,—or quantitative limits,—are real, and really distinct from each other. Hence, such entities are ranged by Aristotle under the fourth species of Quality. Yet, who could even conceive of a sitting position really apart from some one sitting, or of the figure of a cube really existing in nature without quantity? The reason of this impossibility is, that modes are next to nothing; and the mere fashions—however real in the concrete,—of the being of their Subject.

Precisely the same in this respect is apparent in substantial modes,—such as, for instance, the union itself between soul and body. Where would the union be, if there were no soul and no body? Yet the said union is real; otherwise, the juxtaposition,—nay, the existence,—of both would be enough.

Declaration of the Proposition.

Accidental modes are real entities and really actuate their Subject. Moreover, they intrinsically actuate their Subject. Therefore, they exercise real formal causality.

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PROPOSITION CCXXXVII.

Accidental modes are educed out of the potentiality of their Subject.

This Proposition needs no declaration; since the demonstration already given in the instance of accidental and substantial bodily Forms is equally valid as applied to modes.

PROPOSITION CCXXXVIII.

Artificial Forms are simply accidental modes. Wherefore, they exercise a real formal causality and are educed out of the potentiality of their Subject.

Declaration of the Proposition.

It behoves us, in this interesting and important metaphysical question that is so intimately connected with aesthetics, to discriminate with great care between efficient on the one hand and formal and material causality on the other. The former will occupy our attention in the next Chapter; but it matters little to formal or material causality, whether the efficient cause be either what is called natural or human. As a fact, in both cases art governs; since the efficiency of nature in ultimate analysis proceeds from the Divine Artificer. But there is a wide difference, nevertheless, between the effects possible to the one and to the other. The efficacy of human causality does not extend beyond the production of a mode, (save when it exhibits itself as a purely natural agency); though it may assist nature in its formal and material causality by applying the necessary conditions. But these modes, *industriously* produced, exercise a real formal causality. Thus, for instance, the exterior figure given by a sculptor to a block of marble is a mere mode of the quantity informing the marble; yet it gives a real form to the stone. No sane person can doubt that the particular shape is there united really to the marble. Moreover: It is equally plain that such mode is educed out of the potentiality of the marble, and that it depends upon the latter for its existence and preservation as its material cause, and that it has no subsistence of its own.

It has, indeed, been objected that these artificial Forms are not educed out of the *natural* potentiality of their Subject; since the

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marble, if left to the simple operation of natural forces, would never develope into such figures. Hence, it has been asserted that such Forms correspond with what has been called the *obediential* potentiality of matter, not with its natural potentiality. By *obediential* potentiality is understood the purely passive capacity for receiving an act, or Form, in obedience to the action of a higher than mere natural efficiency; as happens in the instance of supernatural accidents.

In answer, two observations occur. First of all, it is not a metaphysical impossibility that the stone should assume such a shape; though it is physically improbable. There are, indeed, instances,—as all who have read *Tom Brown* are aware,—of rocks that have taken to themselves a shape all but sculptorial. Then, again: Suppose even that such Forms actuate an obediential potentiality in their Subjects; this does not hinder their being truly educed from such potentiality, provided that it is real. All the conditions necessary and sufficient for their eduction are present; and the nature of the potentiality does not affect the question.

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APPENDIX A.

THE TEACHING OF ST. THOMAS TOUCHING THE GENESIS OF THE MATERIAL UNIVERSE.

It remains now to fulfil the promise previously given, and to set before the reader a succinct account of the evolution of bodies according to the doctrine of St. Thomas. It will be made as brief as possible; since a detailed exposition belongs properly to that which was till lately known as *physical science*. The following Summary must necessarily include certain points that have been already discussed during the course of this Chapter; but it will not be inconvenient to have them reduced under one conspectus.

I. The primordial Divine Act of Creation terminated in three creatures; viz. the spiritual Intelligences, the celestial bodies, the elements or simple bodies. The first two we may dismiss, and limit our attention to the last. These were each constituted of primordial matter and their respective substantial Forms. The reason why these simple bodies are called *elements*, is thus explained by the Angelic Doctor: 'No mediate Form is discoverable between primordial matter and the Form of an element, in the way that there are found many mediate Forms between primordial matter and the animal-Form, of which one succeeds another until the ultimate perfection is attained, many generations and corruptions intervening, as Avicenna remarks[1].' Hence, if you could resolve an element, (which is *absolutely* impossible); you would be in presence of naked primordial matter.

II. At the same time there was concreated in the primordial

[1] 'Prima habilitas quae est in materia, est ad formam elementi. Unde non invenitur aliqua forma media inter materiam primam et formam elementi, sicut inveniuntur multa media inter materiam primam et formam animalis, quarum una alteri succedit, quousque ad ultimam perfectionem veniatur, intermediis multis generationibus et corruptionibus, ut Avicenna dicit.' 2 *d.* xii, *a.* 4, *c.*, *in m.*

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matter, thus primevally constituted under the Forms of the elements, a true passive potentiality for all subsequent bodily Forms; so that these latter were virtually precontained in the primordial matter.

III. But, as yet, these elements were not in a proximate disposition for combination and the gradual evolution of the material universe. Wherefore, certain *seminal forces or influences* were implanted in matter, in order that it might be completed in this proximate disposition. (The term used by St. Thomas is *rationes seminales*, for which it is impossible to find a just English equivalent.) The Angelic Doctor shall explain them himself. 'The powers lodged in matter,' he writes in one place, 'by which natural effects result, are called *seminales rationes*[1].' In another place he is more explicit: 'The complete active powers in nature with the corresponding passive powers,—as heat and cold, and the form of fire, and the power of the sun, and the like,—are called *seminales rationes*. They are called seminal, not by reason of any imperfectness of entity that they may be supposed to have, like the formative virtue in seed; but because on the individual things at first created such powers were conferred by the operations of the six days; so that out of them, as though from certain seeds, natural entities might be produced and multiplied[2].' It may be presumed that electricity, with its cognates, galvanism and magnetism, would be a good modern illustration of these forces.

IV. Thus was completed the Work of the Mosaic six days. All the rest was the result of a gradual natural evolution,—that is to say, of an evolution effected by the Creator according to the laws imposed by Himself on nature and through the operation of natural causes. 'Augustine maintains,' writes the Angelic Doctor, 'that in the very beginning of the creation there were certain entities specifically distinguished in their proper nature,—as, the elements, the celestial bodies, and spiritual substances; while there were some in their *seminales rationes* only, as animals, plants, and men,

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[1] 'Ipsae autem virtutes in materia positae, per quas naturales effectus consequuntur, rationes seminales dicuntur.' 2 *d.* xviii, *Q.* 1, *a.* 2, *c.*, *v. m.*

[2] 'Et ideo concedo . . quod rationes seminales dicuntur virtutes activae completae in natura cum propriis passivis, ut calor et frigus, et forma ignis, et virtus solis, et hujusmodi: et dicuntur seminales non propter esse imperfectum quod habeant, sicut virtus formativa in semine; sed quia rerum individuis primo creatis hujusmodi virtutes collatae sunt per opera sex dierum, ut ex eis quasi ex quibusdam seminibus producerentur et multiplicarentur res naturales.' *Ibidem*, *in f.* ('Completae in natura' might, perhaps, be translated 'naturally complete).'

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all of which were afterwards produced in their proper nature by that operation by which, after those six days, God administers nature already created[1].' In another place, St. Thomas speaks more pronouncedly in his own person: 'Wherefore,' he writes, 'keeping in the pathway of other saints,' (as distinguished from St. Augustine), 'who maintain' temporal 'succession in the Works of the six days, the answer seems to me to be this: That primordial matter was created under a certain number of substantial Forms, and that all the substantial Forms of the essential parts of the world were produced in the beginning of the creation.' The passage that follows and is omitted as containing the old physical ideas, shows plainly that he is referring to the Forms of the primordial elements. '... But I add, that the active and passive powers,'—the *seminales rationes*,—'were not conferred on the parts of the world at the beginning, by which they are said to have been afterwards distinguished and ordered[2].' Hence we gather two important points in the teaching of the Angelic Doctor; the one, that he pronounces in favour of a succession of time even in the Works of the six days; secondly, that the various orders of material substances were not constituted at once, but that their evolution was left to the operation of natural causes,—in particular, of the active and passive powers in nature.

V. The last passage quoted in the preceding Section alludes to a difference of opinion among the early Fathers of the Church as to the interpretation of the six days of Creation, recorded in the Mosaic Cosmogony. St. Augustine maintained that they were not meant to express succession of time but succession of order. Others, Greek Fathers, on the contrary, supposed them to represent succession of time. St. Thomas judges that either opinion may be safely entertained. As the discussion is Theological, this

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[1] 'Augustinus enim vult in ipso creationis principio quasdam res per species suas distinctas fuisse in natura propria, ut elementa, corpora caelestia, et substantias spirituales; alia vero in rationibus seminalibus tantum, ut animalia, plantas, et homines, quae omnia postmodum in naturis propriis producta sunt in illo opere quo post senarium illorum dierum Deus naturam prius conditam administrat.' 2 *d.* xii, *a.* 2, *c.*, *in m.*

[2] 'Et ideo tenendo viam aliorum sanctorum qui ponunt successionem in operibus sex dierum, videtur mihi dicendum, quod prima materia fuit creata sub pluribus formis substantialibus, et quod omnes formae substantiales partium essentialium mundi in principio creationis productae sunt. ... Sed dico quod virtutes activae et passivae nondum in principio partibus mundi collatae fuerant, secundum quas postmodum distingui et ordinari dicuntur.' *Ibidem*, *a.* 4, *c.*, *v. f.*

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is not the place to pursue it; nor would it have been alluded to, save that, while balancing these two opinions, the Angelic Doctor gives a brief summary of the points on which both Schools were agreed,—a summary which is of singular importance as exhibiting the consentient judgment of the primitive Church relatively to the present subject. 'Because Augustine lays down,' writes St. Thomas, 'that all the Works of the six days were done at once, he does not therefore seem to be at variance with the others as touching the manner in which things were produced: First of all, because according to both, in the first production of things, primordial matter was under the substantial Forms of the elements, so that primordial matter was not prior in duration of time to the substantial Forms of the elements of the world: Secondly, because in the opinion of both, on the first constitution of things by the Work of Creation, plants and animals were not existent in act, but only in potentiality; so that they might be produced from the elements themselves by the power of the Word[1].'

VI. Chemical compounds, in particular,—with which the natural evolution of the material universe was initiated,—were not created but generated according to natural operation after the six days of Creation. Primordial matter, says the Angelic Doctor, 'did not have one Form, but many; not, indeed, the Forms of mixed bodies, because these are a consequence of the active and passive forces of the principiants of the world, by which it is essentially integrated[2].' Hence he makes the further remark: 'The nature of an entity is not the same in its perfectly constituted being as in the course of its production. Accordingly, although the nature of the world in its completed state postulates that all the essential parts of the universe should exist together; nevertheless, it could have been otherwise in the course of the world's production;—just as the heart in a completely developed man cannot exist without

[1] 'In hoc autem quae (?) Augustinus ponit, omnia opera sex dierum esse simul facta, non videtur diversificari ab aliis quantum ad modum productionis rerum. Primo, quia secundum utrosque in prima rerum productione materia erat sub formis substantialibus elementorum; ita quod materia prima non praecessit duratione formas substantiales elementorum mundi. Secundo, quia secundum utrorumque opinionem in prima rerum institutione per opus creationis non fuerunt plantae et animalia in actu sed tantum in potentia, ut ex ipsis elementis per virtutem verbi possent produci.' *Po*^{a} *Q.* iv, *a.* 2, *c. v. f.* See a brief summary of this Article, 1$^{a^{e}}$ lxxiv, 2, *c.*

[2] 'Dicendum quod' materia prima 'non habebat formam unam, sed plures; non quidem formas corporum mixtorum, quia hae consequuntur virtutes activas et passivas principiorum mundi, ex quibus essentialiter integratur.' 2 *d.* xii, *a.* 4, 3^{m}.

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the other parts, and yet, in the formation of the embryo, the heart is generated before all the members[1].' Whatever may be the judgment of physicists touching the physiological value of the above passage, is a matter of comparatively small importance. The value of the quotation, (which accounts for its appearance here), consists in this, that it shows how thoroughly St. Thomas held to the doctrine of a gradual evolution.

VII. As has been noticed in another place, though the Angelic Doctor uses the terms *mixture* and *mixed*, with reference to these chemical combinations of the compound bodies; yet he makes a point, whenever he is expressly treating of them, to distinguish with careful accuracy between them and what are called in modern chemistry mechanical mixtures. He distinctly points out that in the former the substantial Forms of the simple components make way for the substantial Form of the compound, so that two or more bodies are transformed into one; whereas in the instance of the latter the bodies remain two or more, but appear one to sense by reason of the intimate juxtaposition of their molecules.

In order, however, to afford an adequate idea of the teaching of the Angelic Doctor with regard to the genesis of bodily substances, it will be necessary to set before the reader that which he has to tell us touching the nature and constitution of these chemical compounds. Agreeably with the order that has been ordinarily adopted in this Work, St. Thomas shall first speak for himself; afterwards his doctrine shall be presented in a connected and synoptical form. The following are the passages collected:—

1. 'If, then, in the production of the compound the substantial forms of the simple bodies remain; it follows that the composition would not be a true one, but only in appearance;—a sort of juxtaposition of parts that are not pervious to sense by reason of their smallness of size. . . . It is worthy of consideration, then, that the active and passive qualities of the elements are mutually opposed and admit of more and less. Now, out of contrary qualities that admit of more and less,—that is, which are capable of degrees of intensity,—can be constituted a medium quality which includes

[1] 'Non est eadem natura rei jam perfectae, et prout est in suo fieri; et ideo quamvis natura mundi completi hoc exigat ut omnes partes essentiales universi sint simul, potuit tamen aliter esse ab ipsa mundi factione; sicut in homine perfecto non potest cor esse sine aliis partibus; et tamen, in formatione embrionis, cor ante omnia membra generatur.' *Ibid. a.* 2, 6[m].

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something of the nature of each; as, for instance, *pale* between *white* and *black* and *tepid* between *hot* and *cold*. In this way, then, by an abatement in the exuberance of the elemental qualities, out of them there is constituted a medium quality which is a quality proper to the compound body, differing, however, in different bodies according to a diversity of proportion in the composition. This quality is a proper disposition for the Form of the compound body, just as the simple quality is for the Form of the simple body. Accordingly, as the extremes are to be found in the medium which partakes in the nature of each; so, in like manner, the qualities of the simple bodies are to be found in the quality proper to the compound body. Now, it is true that the quality of a simple body is not the same as the substantial Form of the body; still, it acts in virtue of the substantial Form. . . . Thus, then, the energies (or virtues) of the substantial Forms of simple bodies are preserved in compound bodies. The Forms of the elements, therefore, are in the compounds not actually but virtually [1].'

2. 'The Forms of the elements remain in the compound not actually but virtually. For the qualities proper to the elements, (within which there is the efficacy of the elemental Forms), remain though tempered. And such quality of the combination is a special disposition for the substantial Form of the compound body, —a *stone*, for instance, or any whatsoever living thing [2].'

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[1] 'Si igitur mixtum fiat remanentibus formis substantialibus simplicium corporum, sequitur quod non sit vera mixtio, sed ad sensum solum, quasi juxta se positis partibus insensibilibus propter parvitatem. . . . . Considerandum est igitur, quod qualitates activae et passivae elementorum sunt ad invicem contrariae, et suscipiunt magis et minus. Ex contrariis autem qualitatibus suscipientibus magis et minus constitui potest media qualitas, quae utriusque sapiat extremi naturam, sicut pallidum inter album et nigrum, et tepidum inter calidum et frigidum. Sic igitur remissis excellentiis qualitatum elementarium, constituitur ex eis quaedam qualitas media, quae est propria qualitas corporis mixti, differens tamen in diversis secundum diversam mixtionis proportionem. Et haec quidem qualitas est propria dispositio ad formam corporis mixti, sicut qualitas simplex ad formam corporis simplicis. Sicut igitur extrema inveniuntur in medio quod participat utriusque naturam; sic qualitates simplicium corporum inveniuntur in propria qualitate corporis mixti. Qualitas autem corporis simplicis est quidem aliud a forma substantiali ipsius; agit tamen in virtute formae substantialis. . . . Sic igitur virtutes formarum substantialium simplicium corporum salvantur in corporibus mixtis. Sunt igitur formae elementorum in mixtis non actu, sed virtute. Et hoc est quod dicit Philosophus in 1 de Gener.' *Opusc.* xxxiii, (*aliter* xxix), *De Mixtione Elementorum*. Although many of the *Opuscula* included in the Works of St. Thomas are either doubtful or spurious; the authenticity of the one here quoted does not seem to have been called in question.

[2] 'Dicendum est secundum Philosophum (2 de part. anim a princip.), quod formae

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3. 'In another manner, some one entity is produced out of perfect but transformed substances; just as a compound body is produced out of the elements. . . . That which is compounded is not specifically identical with any one of the components; *flesh*, for instance, specifically differs from every one of the elements[1].'

4. 'One is produced out of many by' chemical 'combination; in the way that out of the four elements is produced a compound body. . . . Such combination is proper to those entities only which are jointly material in their composition and naturally act upon and are acted upon by each other. Combination cannot be effected of components one of which is in great excess of the other. . . . Supposing a combination to be effected of two components, neither nature would be preserved; but some third or other[2].'

5. 'When anything small is admixed with a very great,'—that is to say, small and great in their relative quantities,—'it does not produce a combination, as is said in the first Book *De Generatione;* but the specific nature of the small that is added to the great is dissolved; as, if a drop of wine should be added to a thousand pitchers of water[3].'

6. 'Whensoever a combination is made of any' bodies 'that differ *in virtue* either of opposite qualities or of pureness and impureness of the same' quality; 'when the combination is complete, neither retains its own proper quality, (otherwise, the combination would be of bodies that remain in their own nature and would be composition'—admixture—'only), but it is necessary that the whole together should receive one Form which is mediate[4].'

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elementorum manent in mixto non actu, sed virtute; manent enim qualitates propriae elementorum, in quibus est virtus formarum elementarium. Et hujusmodi qualitas mixtionis est propria dispositio ad formam substantialem corporis mixti, puta formam lapidis vel animati cujuscumque.' 1ae lxxvi, 4, 4m.

[1] 'Alio modo fit aliquid unum ex perfectis, sed transmutatis; sicut ex elementis fit mixtum. . . . Secundo, quia id quod est commixtum, nulli miscibilium est idem specie; differt enim caro a quolibet elementorum specie.' 3ae ii, 1, *c.*, *p. m.*

[2] 'Tertio modo, ex pluribus fit unum per commixtionem, sicut ex quatuor elementis fit corpus mixtum. . . . Mixtio non est nisi eorum quae communicant in materia et quae agere et pati ad invicem nata sunt. . . . Ex his quorum unum multum excedit aliud mixtio fieri non potest. . . Dato quod fieret mixtio, neutra natura remaneret salva, . . sed aliquid tertium.' *Cg. L.* iv, *c°* 35, *v. m.*

[3] 'Quando aliquid parvum alicui maximo admiscetur, non facit mixtionem, ut in 1 de Gener. dicitur; sed solvitur species parvi quod magno additur, sicut si gutta vini mille amphoris aquae addatur.' 2 *d.* xxx, *Q.* 2, *a.* 2, *c.*, *p. m.* *Cf. Verit. Q.* xiii, *a.* 3, 1m.

[4] 'Quandocumque autem fit mixtio aliquorum differentium vel secundum contrariam

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7. 'We see that compound bodies have Forms so much the more noble in proportion as they arrive nearer to an equally tempered combination. Wherefore, that which has the most noble Form,—viz. intellectual substance,—if it is a compound, must be most perfectly tempered. Hence we notice that softness of the flesh and an exquisite sense of touch, which indicate a well-balanced interlacing of the elementary constituents, are signs of a good intellect[1].'

From the above passages the doctrine of the Angelic Doctor touching the genesis of chemical compounds may be easily deduced. Let it be reduced to the following principal heads.

i. The production of compounds, (which is the primordial step in the natural evolution of the material world out of the created elements), is a substantial generation. For the Forms of the component elements make way for a new substantial Form by which the compound is constituted. *See No. 6.*

But it is to be observed that the generation of these compounds differs from all other generations specifically so called, notably in this; that the evolution of the new Form is effected by the chemical combination of two complete substances. Hence, the corruptive motion is terminated to two substantial Forms, not to one only. *See No. 3.* Thus, the combination of oxygen and hydrogen, which constitutes water, involves in the process the corruption of the two Forms of oxygen and hydrogen. There are other differences, the consideration of which will find a more appropriate place in the next Chapter.

ii. The primary qualities of the component elements remain under modification in the compound; so that there is a true sense in which it may be affirmed that there is a physical permanence of the elements in all the compounds, into the constitution of which such elements enter. The reason is, that the properties are the instrumental causes of the element,—the faculties or forces by

qualitatem vel secundum puritatem et impuritatem ejusdem, mixtione completa non retinet unumquodque qualitatem propriam: alias admixtio esset ex rebus salvatis, et esset compositio tantum: sed oportet ut totum simul unam formam accipiat, quae est medium.' *Ibid. a.* 1, *c.*, *v. f.*

[1] 'Cum videamus corpora mixta tanto nobiliores formas habere quanto magis ad temperamentum commixtionis perveniunt. Et sic quod habet formam nobilissimam, utpote substantiam intellectualem, si sit corpus mixtum, oportet esse temperatissimum. Unde etiam videmus quod mollities carnis et bonitas tactus, quae aequalitatem complexionis demonstrant, sunt signa boni intellectus.' *Cg. L. II, c°* 90, *init.*

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which it acts on other bodies. But these qualities do not remain in their normal integrity; if they did, there would be no chemical combination but only mechanical mixture. For if they remained in their normal integrity, (seeing that they are the respective properties of the elemental substances to which they appertain), the Form of each element would likewise necessarily remain and there would be no substantial change. Hence, there is a mutual combination of the qualities proper to each component element, by virtue of which a medium quality is produced proper to the new Form of the compound. But within such medium quality are potentially contained the primitive qualities of the component elements. Thus, as chemists tell us, the weight of a compound is the sum of the weights of its components. *See Nos.* 1, 2.

iii. It follows from the preceding observation that the substantial Forms of the elements exist virtually in the compound after a manner very different from the virtual inclusion of all other bodily Forms in the potentiality of matter. For they are there in virtue of their qualities or properties which, however modified in themselves and in their action, remain nevertheless as extremes in the medium quality which is the result of chemical combination. *See No.* 1.

iv. In order that chemical combination may take place between two or more simple bodies, it is necessary that there should be a definite proportion between them. If such proportion is violated, the greater absorbs the less. *See Nos.* 4, 5.

v. A diversity in the normal proportion gives birth to a diversity in the quality or qualities and, consequently, to a diversity specific or other in the substantial compounds themselves. *See No.* 1.

vi. In every element there exist active as well as passive qualities by which each can act upon, and in turn be acted upon by, its neighbours. It is by means of these that chemical combinations take place. *See Nos.* 1, 4.

vii. As the active qualities in the respective elements are often mutually opposed, a sort of neutralization takes place in the process of combination, whence results a medium quality. *See Nos.* 1, 2. This neutralization may be described as a balancing or tempering of the qualities as capable of intension and remission. *See Nos.* 1, 7.

viii. The balance and temperament of the qualities is more perfect in proportion to the perfection of the substantial Form of

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the compound. *See No.* 7. Hence, in organized bodies, (which are proper to living substances), the composition is more complex and the balance of qualities more complete.

ix. In the compound there is a well-balanced interlacing of the constituents.

A consideration of the relation which the above principles hold to modern chemistry is reserved for the next Chapter. Meanwhile, one remark is suggested in connection with the special subject-matter of this Appendix. The genesis of inorganic from organic compounds,—in a word, the leap from bodies animate to inanimate, —seems to be the result of chemical combinations so naturally progressive, that there is no apparent reason why it should not have been the result of gradual evolution, subject to the ordinary supervision of the Divine Providence. If this be so, then it follows that we must regard sexual reproduction as a mere physical law ordained for the wisest ends, but not as an absolute necessity. Should this inference be legitimate, the appearance of the first pair in any given species can be easily explained without our being obliged to have recourse to any *extraordinary* intervention. Such is certainly the outcome of the teaching of St. Thomas. The one exception is always understood,—the human soul.

VIII. St. Thomas includes the production of minerals in a sort of way under that of the elements. 'Because mineral bodies,' he writes, 'do not possess any evident excellence of perfection over the elements such as living things have, their formation is not described' in the Mosaic record 'apart from the elements; but they may be understood to have been produced in the institution itself of the elements[1].'

IX. According to the Mosaic cosmogony which the Angelic Doctor takes, of course, for his infallible guide, plants were created after the elements and before the animals. But St. Thomas as evidently teaches, that they were actually produced after the seminal forces had been conferred on nature and after the chemical combinations had been effected by virtue of these forces. (See Sections IV and V). A question, however, arises, whether St. Thomas taught that plants were created in the strict sense of this

[1] 'Quia corpora mineralia non habent aliquam evidentem perfectionis excellentiam supra elementa, sicut habent viventia, non seorsum ab elementis formata describuntur; sed in ipsa elementorum institutione possunt intelligi esse producta.' *Po*ª *Q.* iv, *a.* 1, 13ᵐ. *Cf.* 1ª⁹ lxix, 2, 3ᵐ.

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term, or whether they were gradually developed by natural operation under the Divine Administration. After the passages quoted in the Sections referred to, it can scarcely be doubted that St. Thomas held the latter opinion; for he tells us expressly that this was one of the two points on which the two Patristic Schools were agreed. Further: In the passage about to be quoted, it would seem as though his leaning in this his last Work was rather towards the interpretation of St. Augustine in its entirety. After pointing out how this Doctor of the Church shows the consonance of his opinion with the Mosaic narration, he proceeds as follows: 'This view is likewise confirmed by reason. For in those first days God created the creature *in its origin or cause*, and afterwards rested from this Work. Nevertheless, he subsequently until now works according to the administration of created things by the Work of propagation. Now, to produce plants from the earth belongs to the work of propagation. Therefore, on the third day plants were not produced in act but only in their cause[1].' In another place he defends the opinion of St. Augustine at greater length. These are his words: 'In the opinion of Augustine, when it is said, *Let the earth bring forth the green herb* (Genesis i. 11), it is not meant that plants were then produced actually and in their proper nature, but that then there was given to the earth a germinative power to produce plants by the work of propagation; so that the earth is then said to have brought forth the green herb and the tree yielding fruit in this wise, viz. that it received the power of producing them. And this he confirms by the authority of Scripture (Gen. ii. 4), where it is said, *These are the generations of the heavens and the earth, when they were created, in the day that the Lord God made the heaven and the earth, and every plant of the field* BEFORE IT SPRUNG UP *in the earth, and every herb of the ground* BEFORE IT GREW. From this passage two things are elicited: First, that all the works of the six days were created in the day that God made the heaven and earth and every plant of the field; and, accordingly, that plants, which are said to have been created on

[1] 'Confirmatur hoc etiam ratione; quia in illis primis diebus condidit Deus creaturam originaliter, vel causaliter; a quo opere postmodum requievit: qui tamen postmodum secundum administrationem rerum conditarum per opus propagationis usque modo operatur. Producere autem plantas ex terra ad opus propagationis pertinet. Non ergo in tertia die productae sunt plantae in actu, sed causaliter tantum.' 1ae lxix, 2, *c.*

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the third day, were produced at the same time that God created the heaven and the earth. Secondly, that plants were then produced, not in act but according to causal virtues only; in that the power of producing them was given to the earth. This is meant, when it is said that it produced every plant of the field *before it actually sprang up in the earth* by the work of administration, and every herb of the ground *before it actually grew*. Prior, therefore, to their actually arising over the earth, they were made causally in the earth. This view is likewise confirmed by reason. For in those first days God created the creature either in its cause, or in its origin, or in act, in the Work from which He afterwards rested. Nevertheless, He subsequently until now works according to the administration of created things by the Work of propagation.

'But to produce plants in act out of the earth, belongs to the work of propagation; because it suffices for their production that they have the power of the heavenly bodies, as it were, for their father, and the efficacy of the earth in place of a mother. Therefore, plants were not actually produced on the third day, but only causally. *After the six days*, however, they were actually produced according to their proper species and in their proper nature by the Work of administration[1].' To explain: In the Creation,—repre-

[1] 'Secundum Augustinum, cum dicitur: *Producat terra herbam virentem*, non intelligitur tunc plantas esse productas in actu et in propria natura, sed tunc terrae datam esse virtutem germinativam ad producendum plantas opere propagationis; ut dicatur tunc taliter produxisse terra herbam virentem et lignum pomiferum, idest producendi accepisse virtutem. Et hoc quidem confirmat auctoritate Scripturae, Genes. 2, 4, ubi dicitur: *Istae sunt generationes caeli et terrae, quando creata sunt, in die quo fecit Deus caelum et terram, et omne virgultum agri antequam oriretur in terra, omnemque herbam regionis priusquam germinaret.* Ex quo eliciuntur duo. Primo, quod omnia opera sex dierum creata sunt in die quo Deus fecit caelum et terram et omne virgultum agri; et sic plantae, quae tertia die factae leguntur, simul sunt productae quando Deus creavit caelum et terram. Secundo, quod plantae tunc fuerunt productae non in actu, sed secundum rationes causales tantum, quia data fuit virtus terrae producendi illas. Et hoc significatur cum dicitur, quod produxit *omne virgultum agri antequam actu oriretur in terra* per opus administrationis, et *omnem herbam regionis, priusquam actu germinaret.* Ante ergo quam actu orirentur super terram, facta sunt causaliter in terra. Confirmatur etiam hoc ratione; quia in illis primis diebus condidit Deus creaturam causaliter vel originaliter vel actualiter opere a quo postmodum requievit, qui tamen postmodum secundum administrationem rerum conditarum per opus propagationis usque modo operatur. Producere autem plantas in actu ex terra, ad opus propagationis pertinet; quia ad earum productionem sufficit virtus caelestis tanquam pater, et virtus terrae loco matris; ideo non fuerunt plantae tertia die productae in actu, sed causaliter tantum; post sex vero dies fuerunt in actu secundum proprias

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sented by Moses in the manner best suited to the intellectual calibre of the chosen people under the figure of six days, (as St. Thomas, quoting from St. Augustine, remarks), the elements alone, among earthly things, were *actually* produced by the Creative Act; but simultaneously, in the primordial matter thus actuated by the elemental Forms, a virtue was implanted dispositive towards all the material Forms conditionally necessary to the perfection of this earthly universe. But it was an ordered potentiality; so that, in the after actual evolution of these substantial Forms, the lower should precede the higher; and that these latter should presuppose, and virtually absorb the former. Thus were these figurative six days completed with the sowing of the seed of the future Cosmos. There ensued thereupon a Sabbath of rest. The fresh elemental world was sown with germs of future beauty in diverse forms of life, in diversity of species, and possibly varieties under the same species. But these as yet lay hidden in the womb of nature. No earthly substance existed in act save the simple bodies,—primordial matter under its first and lowest Forms. Such was the earthly creation, when the first Sabbath closed in upon it. After this Sabbath followed the order of Divine Administration, wherein (as it continues to the present hour) the Divine Wisdom and Omnipotence superintended the natural evolution of visible things according to a constant order of His own appointing and amid ceaseless cycles of alternate corruptions and generations. Compound inanimate substances were first evolved by means of the seminal forces bestowed on nature. Then, from out the bosom of these compounds sprang into being the green life of herb, plant, and tree, gradually unfolding into higher and more complex Forms of loveliness, as the ages of time rolled on, according to the virtual order imprinted at the first upon the obedient matter. Thence onward marched the grand procession of life, marking epochs as it went along; till it culminated in man,—the paragon of God's visible universe.

It rests to add a word with respect to that which St. Thomas characterizes as the Divine *Work of Administration*. As will be

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species et in propria natura per opus administrationis productae. [Et ita antequam causaliter plantae essent productae, nihil fuit productum, sed simul cum caelo et terra productae sunt. Similiter pisces, aves, et animalia, in illis sex diebus causaliter, et non actualiter, producta sunt.] *Po*ª *Q.* iv, *a.* 2, 28ᵐ. The sentence between brackets is not translated in the text, as referring to the other orders of living things.

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proved in the last Book on Natural Theology, there is absolutely no act whatsoever of any creature possible without the Divine Co-operation in the act. God can operate, as He does in a pure Act of Creation, without the co-operation of the creature; but it is a metaphysical impossibility that a creature should elicit the smallest act,—for instance, a change of posture or the contraction of a muscle,—without the help of God. Now, the Divine Work of Administration includes this; but it includes more. Limiting our attention to the subject in hand, two things notably fall under this His administration. The one is, the constant order (in common phrase, the natural laws) by which the visible universe is governed. Thus, for instance, that all living things should be ordinately propagated by seed belongs to the Divine Administration. The second, which may be called exceptional, is this. Evidently, there must have been a beginning to each higher family of living things. There must have been a first plant, a first fish, a first bird, a first quadruped. Hereditary propagation must have been established subsequently to the production of the first pair in each family of life. That these primitive pairs, then, should have been evolved out of the potentiality of the matter without parentage,—in other words, that the matter (of itself utterly incapable for the task) should have been proximately disposed for such evolution,—belongs to a special Divine Administration: In other words, God must have been the sole Efficient Cause of the organization requisite, and, therefore, in the strictest sense is said to have *formed* such pairs and, in particular, the human body out of the pre-existent matter[1]. But more about this in the next Chapter.

It will be seen, by a comparison of the two citations last given, that there are in each one or two sentences identical in sense and all but verbally identical. There is, however, one notable variation. In *De Potentia* the Angelic Doctor describes the Divine Creation of this visible earthly universe as resulting either in the virtual or actual production of material substances. In the *Summa* he omits any mention of actual production. This seeming divergence may be accounted for in two ways. Either in the former passage among the *Disputed Questions*, St. Thomas intended to include the elements, (whose creation was actual), which he omitted in the latter, because in the *Summa* the problem is restricted to the production of plants,

[1] I^a^ xci, 2, c., et 4^m^; xcii, 4, c., et 3^m^.

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whereas in the *De Potentia* it is general; or he was careful, in the composition of his last Work, to avoid all ambiguity touching his opinion on this point. It is morally certain that he must have had the passage in the *De Potentia* before his eyes, when he was penning his Article in the *Summa*. The verbal identity is too complete to leave any room for doubt.

X. Here is the place to insert the teaching of St. Thomas touching the way in which the various species of living things are interchained; in such wise that the lowest Forms of a higher order are closely allied to the highest Forms of the order immediately beneath it. As this doctrine has been exposed at some length already; it is only necessary to recall attention to it. Still, there is a fresh declaration of it, made by the Angelic Doctor, which it is worth while subjoining. 'Now, it is manifest,' he writes, 'that compound bodies surpass the elements in order of perfection; that plants in like manner surpass mineral bodies, and animals plants; and in each of the genera, according to the degree of natural perfection, a diversity of species is discovered. . . . In minerals nature is found to mount step by step through different species up to the species of gold; in plants, too, up to the species of perfect trees; and in animals up to the species of man. Whereas, on the other hand, there are certain animals which approach most nearly to plants, as those without locomotion, which have only the sense of touch; and, in like manner, there are some plants that approach near to inanimate entities, as is plain from what the Philosopher states in his Work *on Vegetables*[1].' The animals of which St. Thomas speaks are fairly represented by the sponges among the *protozoa*, and by many of the Orders comprised under the sub-kingdom of the *coelenterates;* the plants, by some of the *algae* and *fungi*.

XI. The principle of evolution, as maintained by the Fathers of the primitive Church and by the Angelic Doctor, has been already

[1] 'Manifestum est enim quod corpora mixta supergrediuntur ordine perfectionis elementa; plantae autem corpora mineralia; et animalia plantas; et in singulis generibus secundum gradum perfectionis naturalis, diversitas specierum invenitur. . . . Similiter autem in mineralibus gradatim natura invenitur per diversas species proficere usque ad speciem auri. In plantis etiam usque ad speciem arborum perfectarum; et in animalibus usque ad speciem hominis; cum tamen quaedam animalia sint plantis propinquissima, ut immobilia quae habent solum tactum: et similiter plantarum quaedam sunt inanimatis propinquae, ut patet per Philosophum in lib. de Vegetabilibus.' *Anima, a.* 7, *c., p. m.*

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explained under the ninth Section. Nevertheless, there is an interesting passage to be found in the Works of the latter, which shall be quoted; because it suggests much touching the principle of zoological arrangement. It is as follows. 'The nutritive and growing powers subserve the generative.' Hence it is prone to conclude that, in the judgment of St. Thomas, the generative holds the highest and most distinctive place among the purely vegetative faculties. To proceed with the citation: 'Among the animals, those on the earth, generally speaking, are more perfect than birds and fishes: (not that fishes are without memory); . . . but by reason of distinction of members and perfectness in manner of generation. As to certain marks of sagacity, however, some even imperfect animals more abound, as bees and ants. . . . But animals of the earth (Scripture) designates as a *living soul* by reason of the perfectness of life that is in them, as though fishes were bodies that have something of life; but terrestrial animals, by virtue of the perfectness of their life, are, as it were, souls that dominate over their bodies[1].' From these words we may gather that, in the judgment of the Angelic Doctor, three elements enter by rights into the classification of animals; to wit, their structure and organism, their mode of reproduction, and their sensile faculties. Of these structure and organism hold the lowest, while the sensile faculties claim the highest, place. We must here recall to mind the teaching of St. Thomas relatively to those higher animals that are the most perfect in their order, and anticipate, (so far as it is possible for a merely sensile soul to anticipate),—or rather obumbrate,—the spiritual faculties of thought and will. It may be as well to repeat here likewise that, as the vegetable substances presuppose and embrace chemical compounds, so the sensitive Form of animals presupposes, and eminently contains within itself the nutritive, growing, and reproductive, faculties of the plant-Form.

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[1] 'Nutritiva enim et augmentativa generativae deserviunt. . . . Inter animalia vero perfectiora sunt, communiter loquendo, terrestria avibus et piscibus; non quod pisces memoria careant, (ut Basilius dicit, et Augustinus improbat), sed propter distinctionem membrorum et perfectionem generationis. Quantum autem ad aliquas sagacitates etiam aliqua animalia imperfecta magis vigent, ut apes et formicae; et ideo pisces vocat non *animam viventem* sed *reptile animae viventis*. Sed terrena animalia vocat animam viventem propter perfectionem vitae in eis; ac si pisces sint corpora habentia aliquid animae, terrestria vero animalia propter perfectionem vitae sint quasi animae dominantes corporibus.' I^ae lxxii, *art. unic.*, I^m.

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Hence, animals are naturally posterior to plants in order of development.

XII. At the head of the material universe stands man. As we have already seen, St. Thomas teaches that in the human embryo there is a succession of generations and corruptions, by means of which the future child passes through a vegetative and sensitive life previously to its receiving the human soul. These previous Forms assume a higher grade, in proportion to a growing perfectness of organization. But in every case the inferior Form yields to, and is virtually absorbed by, the superior Form. 'Hence I assert,'—such is the declaration of St. Thomas,—'that on the advent of the human soul, the substantial Form which had previously been in' the human embryo 'is expelled; otherwise, generation would take place without corruption of the other, which is impossible[1].' Further: the preceding lower Forms are purely provisional, and are the result of a process of natural generation originally proceeding from one and the same efficient cause; consequently, they are of a type adapted to their work. Lastly, the human soul, as being a spiritual substance, must be,—and in every case is,—immediately created by the Power of God.

XIII. From the preceding Sections it may be clearly seen, that there is nothing in the *principle* of natural evolution, which is not in strict accordance with the teaching of St. Thomas and of the Fathers of the Church. On the contrary, the latter taught it some fifteen hundred years ago.

XIV. It is likewise plain, according to the same teaching, that the primordial elements alone were created in the strict sense of the term, and that the rest of nature was gradually developed out of these according to a fixed order of natural operation under the supreme guidance of the Divine Administration. The said fixed order is revealed to human cognition in the phenomena of nature.

XV. But *the modern misapplication* of the principle of evolution has led to grave philosophical errors; because certain recent physicists have done that for which Aristotle blames the first known essayists in philosophy. They have practically ignored the formal and efficient causes by which, according to a different order

[1] 'Unde dico quod, adveniente anima humana, tollitur forma substantialis quae prius inerat; alioquin generatio esset sine corruptione alterius, quod est impossibile.' *Quol. L.* I, *a.* 6, *c.*, *in f.*

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of causality, each nature is essentially constituted, and have based their theories exclusively upon the material cause. Accordingly, they seem wedded to the strange hypothesis that the organism constitutes the Form (the species), rather than that the Form constitutes the organism. In all the theories more or less based on protoplasm, or on the diseased bioplasm of Dr. Beale,—theories of Pangenesis or of the evolution of the living cell, etc.—there is consequently a fatal flaw. They do not account for *life*. They begin with organism; but organism connotes life. Whence, then, this life? Take the first instance,—and a first instance there must have been,—of an inanimate chemical compound showing signs of life,—say phenomena of cleavage and of subsequent Gastraean inversion. How is it that this particular inanimate chemical compound has taken such a start? If matter evolves itself spontaneously into life without aid of formal or efficient cause; why have not the metamorphic rocks through all these eons of time shaken off the incubus of their primitive passivity, and wakened up into protoplasm, and thus secured to themselves the privilege of self-motion, internal growth, reproduction? Again: Is it possible to imagine that brute matter, inert and purely passive, could by its own unaided exertions pass straight from the laboratory into the kingdom of life? And if one mass could do it, why not all? Why do those venerable metamorphic rocks remain at the root of the geological tree, unchanged? Perhaps, this may prove another instance of the *survival of the fittest*. Here, then, is the flaw. These recent theorists accept life as a fact; and they start with it. They are superstitiously contented to begin and end with a mystery, because they are either afraid or unwilling to acknowledge the operation of a formal and of an efficient cause in the evolution of material substances.

XVI. Because, as the Angelic Doctor teaches, the human embryo, (and the same may safely be predicated, as we have seen, of other embryos), goes through successive provisional stages of life; it in no wise follows that man is originally descended from inferior animals. This identification of *Ontogeny* and *Phylogeny*, (to adopt for once this infelicitous terminology of the day), is a patent paralogism; and is obnoxious to the charge of completely ignoring the action of secondary efficient causes in natural evolution. An efficient cause cannot go beyond the limits of its own native energy; although it can produce all that is virtually included

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under its proper term of production. Man, as efficient cause of generation, can generate the lower Forms of life, because his soul virtually and eminently contains them all under itself; but a worm cannot generate a fish, or a fish a quadruped, simply because it is above its power. In this respect the old proverb holds good, *Like begets like.* With varieties under the same species the case is different; because these may be produced by the influence of different external circumstances on the efficient cause, and even on the special evolution of the formal cause and the concomitant qualitative accidents.

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APPENDIX B.

SIGNIFICATIONS OF THE TERMS, *FORM, MATTER,—FORMAL, MATERIAL,—FORMALLY, MATERIALLY.*

Form and Matter.

Taking the most universal and least defined sense in which the terms *Form* and *Matter* are employed, we may say that *Matter* represents every entity which is, or is conceived as being, the Subject, potentiality, inferior part, of some real or conceived composite; while *Form* represents every entity which either is or is conceived as being subjected to its Subject,—the act or superior part of some composite. For the clearer and more definite understanding of these two general concepts, two points will be submitted to the reader's consideration: First of all, what is to be understood by the terms, *Subject, Potentiality, Part,* and their *Correlatives*? secondly, what entities in a true and univocal, what in an accommodated or analogical, sense are designated by these terms. From the definite predicability of the nouns it will be comparatively easy to determine the homogeneous application of adjective and adverb.

I. THE MEANING OF THE TERMS, *Subject, Potentiality, Part, with their Correlatives.*

In its most universal acceptation *Subject* is understood to be anything whatsoever which is so ordered relatively to another entity as that this latter should be in it. *Potentiality,* (passive of course), whatsoever is so ordered that by it a thing is, which without it is not. *Part* is that which is ordered relatively to another entity more noble, less noble than, or equal to itself, that together with this latter it may make a whole of some sort. *That which is subjected to the Subject* (subjectatum), is that which inheres in the Subject; *Act,* is that by which a potentiality is determined to be what without that Act it neither is nor can be.

Now, a *Subject, Potentiality, inferior Part,* and in like manner their *Correlatives,* may be real and physical, real and metaphysical,

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or logical. Again: *Real and physical* may be either intrinsic or extrinsic, accordingly as the three former are either intrinsically or extrinsically perfected by the three latter. In a strict sense they are said to be intrinsic, when the *Subject*, *Potentiality*, *inferior Part*, are not only perfected but perfect their correlatives, and when in like manner their Correlatives,—*Form*, *Act*, *superior Part*, not only perfect but are in turn perfected. In a less strict sense they are said to be intrinsic, when the former are only perfected, and the latter only perfect the former. They are said to be denominatively Subject, etc., and correlatively; when there is no such *real* perfectibility on the one side or perfectioning on the other, but only according to our way of conceiving and consequently of denominating. They are said to be *corporeal* or *incorporeal*, as applied to corporeal or incorporeal entities. They are, moreover, *substantial* (either complete or incomplete) or *accidental*. Here remark, that the relative may be substantial, and its correlative accidental. By *real and physical* we must understand that the entity denominated as Subject, etc., is not only a real entity itself but is really distinct from the entity denominated by the correlatives, Form, etc. If real itself, but not really distinct from the latter, it is a *real and metaphysical* denomination. If the entities are logical, the use of these terms is logical.

Thus much premised, it remains to inquire,

II. WHAT ENTITIES IN A TRUE AND UNIVOCAL, WHAT IN AN ACCOMMODATED OR ANALOGICAL SENSE, ARE DESIGNATED BY THE TERMS? Wherefore,

i. *If that which is denominated as Subject, etc., and that which is denominated as Form, etc., be real and physical*, and

1. are, moreover, *intrinsic* in the strict acceptation of the term, *corporeal*, *incomplete substantial entities*; that which is denominated Subject, etc., is in the fullest and most determinate sense called Matter, and that which is its correlative, the substantial Form.

2. If that which is denominated as Subject, etc., is *intrinsic*, but a *complete substantial entity*, it is with less propriety called the Matter. In such sense, marble is the matter of a statue. That which is denominated as Form, etc., if *intrinsic*, but *accidental*, is in the fullest sense denominated an accidental Form. Thus, the outline is the Form of the statue.

3. If that which is denominated as Subject, etc., is *intrinsic*, but *an accident*; it is still less strictly called Matter. In this way

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quantity is said to be the matter of figure, or outline. Thus, for instance, the quantity of a salt-crystal is the immediate matter of its cubical figure.

4. If that which is denominated as Subject, etc., is *intrinsic*, but *incorporeal*; it is improperly or analogically called by the name of matter. In this way, the intellect, regarded in the light of a passive potentiality, may be called the matter of an act of thought; and in a like manner, free-will the matter of the moral act. The correlatives are analogously termed Form. Thus, a concept is an accidental Form of the intellect; conformity with the order of reason is the intrinsic Form of the moral act, as moral.

5. If that which is denominated as Subject, etc., is *extrinsic*, whether it be corporeal or incorporeal, it is with still less propriety called matter, and similarly its correlative called Form. Thus, the bricks, stones, and mortar, are called the matter; the design, the Form of a house. The books are the matter of a library; their arrangement, the Form. So, in a human act,—or rather, in the act of a man,—the act itself would be the matter; physical compulsion, the Form.

6. If that which is said to be Subject, etc., is only *denominatively* such, it is called *Matter* in the loosest of senses. In this way, bodies are said to be the matter of sensile ideas; facts, the matter of history; virtue, the matter of a panegyric. The correlative likewise is called Form in the loosest of senses.

ii. *If that which is denominated as Subject, etc., is real and metaphysical*, it is sometimes called matter and its correlative, the metaphysical Form; but the terms are used analogically.

iii. *If that which is denominated as Subject, etc., is logical*, it is called genus; while its act is called the difference. These same, considered metaphysically are called respectively the material and the formal part.

Formal and Material.

From what has gone before it will be easy to determine the meaning of the two adjectives, *formal* and *material* respectively. The first is equivalent to *that which belongs to the Form*; the second, to *that which belongs to the matter*. Wherefore, that is said to be material in any given entity, which belongs to that which corresponds with Subject, etc., in its composition; whereas that is called formal in the same which corresponds with act, etc., in its

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composition or manner of conceiving. This declaration will be best explained by examples.

1. The *formal object* is an entity considered as in possession of that by which it is precisely determined to be an object,—that is to say, by which it is fitted to become the term of that faculty of which it is considered an object. The *material object* is that same entity considered as it is in itself and without regard to the aforesaid aptitude. Thus, for instance, something that is tasteful may be a material object of sight, but not the formal. Something that is white may become a material, but not the formal, object of the sense of smell; though it is formal object of sight. A vertebrate animal may be a material object of metaphysics; it is the formal object of zoology. So, again, the same entity may be the material object of sense, intellect, and will; but it becomes the formal object of sense according to its material accident; the formal object of the intellect, inasmuch as it is a truth; the formal object of the will, inasmuch as it is a good.

2. Being is neither really nor conceptually distinct from the *material* True and Good; but it is conceptually distinguished, with a real foundation for the distinction, from the *formal* True and Good.

3. The choice of any object prohibited by the moral law is a *material* sin, when the prohibition is not known to the person who has made the choice; it is a *formal* sin, if the prohibition is known. The reason is, because choice in the latter instance means the choice of difformity from the moral law; but this known difformity determines the will to sin, like as a Form determines a potentiality.

4. In man, metaphysically considered, humanity is something formal; because it determines the specific nature of the complete substance or supposit. Again: In man animality is something material; rationality, something formal. See the eighth Article of the third Chapter of this Book.

Note I. From the examples given it may be clearly gathered, that the same entity may be considered as material or formal under a diversity of respect. Thus, a white thing may be the material object of touch, the formal object of sight.

Note II. The same entity may be a formal object of more than one faculty according to adverse realities contained within itself. Thus, white sugar, *as* white, is the formal object of *sight*,—as sweet, of *taste*,—as rough or sticky, of *touch*,—as a material sub-

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stance, of the *intellect*. Again, as sweet, it is a material object of *touch*,—as rough, of *sight*, and so on. So again, a concept is an intrinsic Form of the intellect,—extrinsic and denominative Form of the object conceived,—matter, of logical Forms or Second Intentions.

Formally and Materially.

The preceding Paragraphs sufficiently determine the sense of these two adverbs. It will, accordingly, prove more profitable to illustrate their multifarious use, leaving more or less to the reader the task of tracing throughout the one fundamental meaning.

1. *An action materially good, is in itself good*;—that is to say, an action that corresponds with the moral law is good in itself, even though he who elicits the action should do so in ignorance of the law or irrespectively of it. An action, therefore, materially good is in potentiality to a right or wrong intention which is the Form of a moral act.

2. *An action materially bad may be formally good.* Thus, a man may perjure himself in a court of law in order to save his father's life. We suppose that he is invincibly ignorant of the paramount claims of the moral law that prohibits perjury, and that his conscience has decided in favour of the parental claims. The action is irreclaimably bad in itself; but the invincible ignorance of the man allows of its being *formally* good. Why? Because his intention was good. He judged,—though falsely, of course,—that under the circumstances it was his duty to perjure himself.

3. *An action materially good may be formally evil.* Thus, almsgiving is good; but if alms should be given with the sole intention of securing a vote, or for purposes of ostentation, or to ruin innocence, it becomes evil formally.

4. *Possible essence is formally negative and conceptual; materially it does not differ from existing essence.* Essence is here considered as the material part of the concept, determinable or not to existence. Its pure possibility is the formal part of the concept; and pure possibility is negative and conceptual. See Book II, Ch. 2.

5. *Intellect, Will, Love, Sanctity, etc., are formally predicable of God; reasoning is not formally predicable of God.* The reason is, that the first-named are perfections in their formal nature, considered apart from the *mode* of their existence in the creature;

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reasoning, on the contrary, essentially connotes an imperfection,—that is to say, an intellect that is not intuitive of all truth.

6. *A picture is formally good but materially bad;* in other words, the conception is good but the execution bad.

7. *The property is materially the owner's, but formally it belongs to the mortgagees.* The owner retains the property, simply because the mortgagees have not foreclosed; but, as the former is virtually a bankrupt, the latter are by *right* (which is regarded as the Form) entitled to the property.

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GLOSSARY.

A.

ACTION. This term always denotes some effect as depending on its efficient cause. Used specifically, it stands for the motion or quasi-motion, caused in the Subject, on its road towards the completed effect. So understood, it is distinguished from *act* which is its term. Used generically, it includes both the motion and the term as dependent on its efficient cause. Sometimes *action*, like its cognate *operation*, is taken as including under one all the acts of a given entity as conspiring towards the attainment of its end. TRANSIENT ACTION. That motion or effect which is produced by the efficient cause in a Subject external to itself. IMMANENT ACTION. That which is produced by the principal efficient cause (the *principium quod*) within itself as Subject, p. 520.

ALTERATION. Accidental change; a change in the accidents of a substance, p. 275.

IN ACTU SIGNATO, IN ACTU EXERCITO. These two terms are used by the Schoolmen to distinguish between two conjoined effects sometimes resulting from the same action. An effect is said to be *in actu signato*, which is directly intended (so to speak) by the action. Thus, the impression produced in the wax by a seal is the effect *in actu signato*. An effect is said to be *in actu exercito*, when it is a necessary concomitant result of the same action, though not directly intended. Thus, in the above instance the cooling of the wax resulting from contact with the seal is *in actu exercito*.

C.

CONDITION. That which is requisite or conducive to the actual causality of a cause, though itself forming no part of such causality. Thus, light is a condition of reading, but it has nothing to do with the act of reading. There are other meanings of the word; but they do not concern us here. CONDITION SINE QUA NON. A condition in default of which causality is naturally impossible. Thus, faggots will not catch fire unless they are dry. CONDITION REMOVENS PROHIBENS. A condition requiring the removal of some obstacle that hinders the causality of the cause. Thus, in order to have sunlight in a room, it is necessary to open the shutters, p. 165.

CORPOREITY. The abstract essence of material substance under its first generic and undifferentiated form that is virtually included in all the specific forms of material substance. Its corresponding term in the concrete is *Body*. The form is said to be generic, because it only exists virtually in the specific forms. It is undifferentiated, because it is the common form of all material substances without distinction, p. 633.

CORRUPTION. The dissolution of a body by the expulsion of that substantial form by which it had been previously actuated. In the order of nature it is the invariable accompaniment of generation. Generation is the effect of the efficient cause *in actu signato*; corruption, *in actu exercito*. This Scholastic use of the term must be carefully distinguished from its ordinary meaning of retrograde transformation such as occurs, for instance, in the death of a living entity.

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G.

GENERATION. In its most generic signification, the production of a new entity or a new production. ACTIVE GENERATION. The new producing or production, formally considered as dependent on the efficient cause. PASSIVE GENERATION. The same production, formally considered as an effect in the Subject of causality. GENERATION IN FIERI. The generating motion on its way to the perfected new production. GENERATION IN FACTO ESSE. The perfected producing or production. (See pp. 275, 279). In its widest sense generation includes all new production even by the Creative Act. In a more restricted sense it includes all transformations, accidental as well as substantial. In a still more restricted sense, substantial transformations only. Yet more specially, the natural production of living things: most specially the natural production of man, pp. 273, 274.

N.

NATURAL. See *Operation.*

O.

OCCASION. Something favourable to the causality of a cause. See pp. 165, 166.

ORDER. See p. 518. It is worthy of notice that order is always a *conceptual* unity in one way or another; since ordered things (or things in an order) are *physically* distinct and only one *intentionally*. Consequently, order necessarily connotes some intelligence that conceives such unity. It is an intellectual being alone that can perceive a *heap* of stones; a brute perceives them simply as stones.

OPERATION, NATURAL. The entire course of action by which an entity, either necessarily or freely, tends to its appointed end, p. 520. *A* NATURAL OPERATION, any action within the same course, or series.

P.

POTENTIALITY. (See Glossary of the first Volume). OBJECTIVE. The capacity of a non-existent entity for existence by virtue of an intellect and power external to itself. Thus, an unformed statue is in the objective potentiality of the sculptor whose mind can conceive and hand execute it. (See Chapter ii. of Book II, on *Possible Being*). SUBJECTIVE. A real capacity in a Subject, (as free-will in man), or real entity that is nothing else but a real capacity, (as primordial matter). See pp. 209, 210, 223.

PRINCIPIANT, PRINCIPIATE. See pp. 146, 147.

PRINCIPIUM QUOD. The supposit or person to whom the causal action or effect is attributed.

PRINCIPIUM QUO. That which is formally cause of the effect. The principium quo is twofold;—the principal cause and the proximate instrumental cause. Thus, when *Peter thinks*, Peter is the *principium quod*, Peter's soul is the *principal principium quo*, and Peter's intellectual faculty is the *proximate and instrumental principium quo*. See p. 522.

PRIORITY A QUO, IN QUO. See p. 566.

R.

REMOVENS PROHIBENS. (See *Condition*). p. 21.

RELATION MUTUAL, NOT MUTUAL. See p. 157.

S.

SCHOLION. Something which is explanatory or illustrative of the subject-matter. It differs from a *Corollary*, in that this latter is an evident deduction from a

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previous demonstration. It differs from a *Prolegomenon*, in that this latter is a preface necessary, one way or another, to the demonstration that follows.

SEPARATED FORMS. Pure Intelligences, wholly independent of matter. They are called *separated* Forms, because they are not only separated from matter, *de facto*,—like the human soul after death,—but likewise *de jure*.

T.

TERM. (See Glossary of the first Volume, and p. 274 of the present Volume).

U.

UNICITY. The *one-aloneness* of a thing. It expresses unity of singularity, or singular unity. Thus, we may speak of the unicity of the sun, because it is the one only centre of the solar system, or of the unicity of the moon as a satellite of our earth, p. 628.

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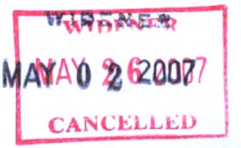

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